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ANALYTICAL RESULTS REPORT OF  
AIR SAMPLING AT RICHARDSON FLAT  
PARK CITY, UTAH  
TDD R8-8608-05  
EPA ID: UTD980952840

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DATE SUBMITTED: SEPTEMBER 19, 1986  
DATE RESUBMITTED: AUGUST 24, 1987

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ANALYTICAL RESULTS REPORT  
FOR RICHARDSON FLAT TAILINGS  
PARK CITY, UTAH  
TDD #R8-8608-05

I. INTRODUCTION

This report was prepared to satisfy the requirements of Technical Directive Document (TDD) R8-8608-05 issued to Ecology and Environment's Field Investigation Team (E&E FIT) by Region VIII Environmental Protection Agency (EPA). This report addresses the analytical results for the air sampling activities conducted at the Richardson Flat Tailings site in Park City, Utah. FIT members conducting the air sampling during July 7-14, 1986 were Henry Schmelzer and Dave Franzen. Sampling procedures used in this investigation conform to the Region VIII FIT SOP for Hi-Vol Air Sampling at Hazardous Waste Site; the Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II - Ambient Air Specific Methods; EPA-600/4-77-027A, May, 1977, U.S. EPA, Research Triangle Park, N.C.; and 40 CFR Part 58, July, 1983.

The overall scope of the project involved the set up and operation of a total of five high volume (hi-vol) air samplers at four sampling locations over a five day period. A total of twenty-nine samples were collected including four duplicates and five blanks. Site access was set up by Sue Kennedy of Ecology and Environment, and Kelsey Land and Matt Cohn of Region VIII EPA.

The objectives of this investigation were to determine if the migration of heavy metal contaminated suspended particulate matter exists and to further substantiate and complete the HRS air route score. This score was previously based on photo-documentation of wind blown tailings material.

## II. SITE DESCRIPTION

Richardson Flat Tailings is located in Summit County, Utah approximately 3.5 miles northeast of Park City. The tailings cover approximately 160 acres in the NW 1/4, Section 1 and NE 1/4 of Section 2, Township 2 South, Range 4 East (Figure 1). Highway 40 runs east and north of the area, and a Union Pacific Railroad track bisects the southern portion of the tailings. Silver Creek is located approximately 500 feet from the northwestern most extension of the tailings. An intermittent stream (water diversion ditch) forms the southeastern border of the tailings. An ephemeral pond overlies the northeastern portion of the tailings, and is contained by a dam at the northwestern end.

## III. SITE HISTORY

The mill tailings at Richardson Flat came from the Keetley Ontario Mine and other metal mines currently owned by United Park City Mines (UPCM). The most recent use of the area for tailings disposal was during the period of time from 1975 to 1981. During this time, UPCM had all its mining properties leased to either Park City Ventures or Noranda Mining, Inc. who constructed and operated milling facilities on UPCM property.

It is estimated that at least seven million tons of tailings were deposited on Richardson Flat. While there is no current dumping of tailings on site, Mr. Ray Wortley is leasing the land the tailings are on from UPCM and using the tailings material for sewer line and road base backfill.

The site is not secured in any way from public access. An unpaved county road along the southern boundary of the tailings is unrestricted. Cattle and sheep are grazed in the area, and cattle have been observed walking across the tailings.

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On June 20, 1985, clouds of fugitive dust moving offsite as a result of strong winds from the west-northwest were photographed by the original EPA-FIT team doing the site investigation. Results of analyses of surface tailings samples showed concentrations as high as 3,600 ppm arsenic, 80 ppm cadmium, 8,530 ppm lead, and 6,360 ppm zinc. Mean soil concentrations for those metals in the western U.S. respectively are 5.5 ppm, 0.2 ppm, 17 ppm, and 55 ppm (Shacklette, 1984).

#### IV. METEOROLOGY

The Richardson Flat tailings lie in a small flat topographic basin of approximately 800 acres. The configuration of the basin was expected to have a pronounced effect on local air flow. The basin is situated at 6600 feet elevation and is surrounded by ridges of the Wasatch Mountains that range from 6700 feet to 7600 feet. Silver Creek enters the basin from the west-southwest then angles to the north. Daytime up valley air flows were anticipated to originate from the west northwest. This was found to be the case.

The data presented in the following section was acquired from The Climatic Atlas of the United States, U.S. Department of Commerce, Environmental Sciences Services Administration, Environmental Data Service, June 1968. The climate of the Park City area is characterized by moderate fluctuations in temperature and precipitation throughout the year. Mean monthly temperatures range from 10 degrees Fahrenheit (°F) in December, January, and February to 80°F in June, July and August. During the month of July the average temperature is approximately 60°F. Precipitation for the Park City area varies from a mean monthly amount of 1.00 inches in July to 2.22 inches in December. Prevailing wind direction at Park City is typically from a southeasterly direction throughout the year. Relative humidity for the Park City area varies from 40 percent in August to 80 percent in December and February. The average relative humidity in July is 50 percent. Barometric pressure ranges from 1022 millibars (30.18 inches of mercury) in December and January to approximately 1010 millibars (29.83 inches of mercury) in June.

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## V. METHODOLOGY

All air sampling stations under this TDD were set up to sample in the breathing zone and were located in accordance with the Region VIII FIT SOP for Hi-Vol Sampling at Hazardous Waste Sites. The meteorologic station was set up next to sample locations AM-03 and AM-04. The wind vane was calibrated to magnetic north.

Air temperature, barometric pressure and relative humidity were also measured. This information was used to correct all flows and air concentrations to standard temperature and pressure conditions (STP).

The samplers were calibrated using a General Metal Works GMW-35 top loading orifice calibrator using an 8" x 10" cellulose filter in place. All samplers were set to run for 12 hours at approximately 40 cubic feet per minute. No calibration curve was available at the time the samplers were set up to initially calibrate them. It was decided to not attempt to change the flow rates since they had been set to 40 cfm at the last sampling site. When the sampling at Richardson Flat was completed, a calibration curve for the calibrator used was prepared at EPA-ESD in Denver and the actual flow rates of the samplers were calculated. See Appendix III.

All samplers were equipped with elapsed timers to record the total sample time. Each hi-vol also was equipped with a flow recorder which measured the flow throughout the sampling period. Any fluctuations in flow during the sample period would be noted on the recorder disk. It also served as a check on the elapsed timer.

Surficial soil samples from five locations were also taken. There was some concern that lead emissions from gasoline powered vehicles would cause interference in the air samples from the traffic along U.S. 40 and the county road. Samples were collected at two feet, ten feet and fifty feet from the edge of the asphalt roadway to see if deposition of lead from these vehicles would cause any interference or affect the results.

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## VI. QUALITY ASSURANCE

The air samples were analyzed for arsenic, cadmium, lead and zinc only. Soil samples were analyzed for Task 1 and 2 metals. The inorganic analytical data were examined thoroughly for compliance with contract laboratory program quality assurance criteria. The data were found to be of good quality. In the air samples, spike recoveries for cadmium and zinc were 65% and 60% respectively and actual values in the tables may be higher than presented. The analytical results for lead in soils were also of good quality. Duplicates showed good agreement. A blank was submitted for each sampling day. The quality assurance reports and raw data are shown in Appendix II.

## VII. ANALYTICAL RESULTS

The results of the inorganic analyses are noted in Table 1. Sample locations are noted in Figure 2.

Formulas used for determining the airborne concentrations are presented along with an explanation of terms with Table 2. Table 2 shows the calculations used to determine the total volume of air sampled corrected to standard conditions by each sampler on each sampling day. This information was used to create Table 3 which contains the average concentration per cubic meter for each of the four elements of concern. When combined with the wind speed and direction information from Figures 4-13, offsite migration of the contaminants can be determined. Table 4 shows the field increases for each days samples comparing upwind and downwind concentrations and downwind versus the remote background. Table 5 shows the Task 1 and 2 metal concentration in soils by the two major roadways by the site.



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## VIII. DISCUSSION

### DAY 1

The sampling period began at 1745 hours on July 8, 1986 with the start up of the hi-vol sampler at location AM-01. The last hi-vol sampler shut off at approximately 0700 hours on the morning of July 9th. The wind rose for this period is shown in Figure 4. The predominant wind flow for this period is from the SE at 61% of the sample period. The SSE direction also accounted for 18% of the wind during this time period. Wind speed and direction at the start of the sample period at 1800 hours were 5-10 mph from the SSE. At 2000 the winds increased slightly to around 10 mph and from the SE. At 2100 the wind speed increased to 15-20 mph from the SE. Winds again increased to over 20 mph with several gusts over 40 mph at 0030. Winds dropped back to 10-20 mph at 0130 and continued until 0500 when winds died to near calm, continuing that way until the end of the sample period at 0700.

Based on sampler locations during this time period, sampler AM-02 would be upwind and samplers AM-03 and AM-04 would be downwind. Sampler AM-05 was located fairly close to these last two locations and can serve as a secondary downwind sample location on this day. Results from Table 4 show a 102 fold increase in lead an 83 fold increase in cadmium, a 49 fold increase in arsenic, and a 40 fold increase in zinc, when comparing upwind versus downwind concentrations.

When sample location AM-02 is compared to AM-05, the results from Table 4 show a 59 fold increase in lead, a 50 fold increase in zinc, a 25 fold increase in arsenic and a 14 fold increase in cadmium.

### DAY 2

Sampling began at 1100 on July 9th and ended at 0300 on July 10th. The wind rose for this sample period is shown in Figure 5. The

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predominant winds are from the WNW and NW with 25% and 18% of the wind respectively from those vectors. The sample period started with light and variable winds from 0-10 mph. At 1430, the wind increased to 10-20 mph and stabilized from the WNW. At 1800 hours the wind dropped back to 5-10 mph and at 2000 the wind went calm and continued that way until the sample period ended.

Based on the wind rose, the upwind sample location would be AM-04 and the downwind location would be AM-02. Comparing upwind versus downwind sample locations reveals an 11 fold increase in lead, a 5 fold increase in zinc, and 7 fold increase in arsenic.

#### DAY 3

The sample period began at 1100 hours on July 10th and continued until 2300 hours. Figure 6 shows the wind rose for the site for this period of time. The predominant wind direction is WNW with 69% of the wind for this time period from that direction. Based on the wind rose and sampler locations, the upwind sampler would be AM-04 and the downwind location would be AM-02.

The wind at the start of the sampling period was from the NNW at 5-10 mph. At 1045, the wind picked up to 10-20 mph from the WNW and continued so until 1800 hours when the wind slowed to 5-10 and then went calm at 2000 hours.

Results from Table 4 show a 9 fold increase in lead, a three fold increase in zinc, a ten fold increase in arsenic and a two fold increase in cadmium when comparing upgradient versus downgradient.

#### DAY 4

Sampling was initiated at 1000 hours and continued until 2300 hours. Figure 7 shows the wind rose for this sampling period. The predominant wind direction is WNW with 55% of the sampling time followed by NW with 10%. Based on this information, the upgradient sample location is AM-04 and the downgradient is AM-02.

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The sample period began with the wind blowing from the east at 5-10 mph. At 1100 hours, the wind became light at less than 5 mph and variable but at 1130 hours it stabilized with the wind coming from the WNW at 5-10 mph. The wind speed picked up to 10-20 mph at 1230 hours. It continued at this speed and direction through 1930 hours and also had a period of gusts to 30 mph around 1400 hours. The wind died off to 5-10 mph at 1930 hours and remained calm after 2000 hours.

Results from Table 4 show an increase in contaminant concentration of two fold for lead, three fold for zinc, seven fold for arsenic and 1.1 fold for cadmium for this sample period. Sampler AM-02 was the last sampler started so consequently when the winds went calm and remained that way for the last 3 1/2 - 4 hours of the sampling period there would be less particulate material becoming airborne to be collected by the sampler.

#### DAY 5

The sample period for the 5th day started at 1000 hours and stopped at 2400 hours. Figure 8 shows the wind rose for this sample period. The predominant wind direction was NW with 25% of the sample time but 18% of the time the wind was from the SE, the completely opposite direction. No reliable upgradient or downgradient sample locations can be derived from the information so the three sample locations next to the tailing were compared to the remote background at AM-01.

The wind was 0-5 mph and variable at the start of the sample period at 1000 hours. It increased to 5-10 at 1300 hours and was predominantly from the SE but shifted to the NW at 1400 hours. This remained the predominant wind direction until 1930 when the wind died and went calm until the end of the sample period.

In comparison to the remote background location at AM-01, the sampler at AM-02 shows a six-fold increase in lead, a two-fold increase in zinc and a 1.8 fold increase in arsenic. When comparing

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AM-01 to AM-04 there is a 3.5 fold increase in lead, 1.3 fold increase in zinc, and a 1.5 fold increase in arsenic at sample location AM-04. Comparing AM-05 to AM-01 there is a 2.4 fold increase in lead, a 1.5 fold increase in zinc, a 1.2 fold increase in arsenic and a 1.25 fold increase in cadmium at sample location AM-05.

Five soil samples were also taken on this day. The results are shown in Table 5. Of principle concern was the potential for interference with lead from vehicle emissions along U.S. 40 and the county road. Deposition of lead from vehicle emissions is most pronounced within the first 15 meters of the roadway. (40 CFR, Part 58, Appendix E, 7.3 and Daines, 1970). The samples taken 2 feet off of the asphalt edge of the roadway on U.S. 40 and the county road show lead at 477 and 418 mg/kg concentrations respectively. At 10 feet from the county road the concentration drops to 133 mg/kg. At 50 feet from U.S. 40 the concentration is 13 mg/kg which is within the range of the average lead in soil concentration for the Western U.S. of 9-31 mg/kg (Shacklette, 1984).

The air sampling location nearest to either U.S. 40 of the county road is over 200 yards. The concentration of lead in the tailings is 8530 mg/kg and the samplers were placed next to the tailings. Hence, based on the soil sampling and the air station placement, lead from vehicle emissions is not likely to be a major contributing factor to lead deposition in the air samples.

Soil sample S0-05 was intended to be a background sample for the soils. It was taken outside of the major airshed for the area in Park City, unfortunately by the Prospector Hotel. The sample contained 3479 mg/kg of lead and through an oversight, was collected from the Silver Creek Tailings proposed NPL site. Hence, sample S0-05 is not a background sample.

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## IX. CONCLUSIONS AND RECOMMENDATIONS

Table 4 compares the airborne metal concentrations of downgradient versus upgradient sample locations by sample day. Lead released from daily downgradient sample location ranged from 2.28 to 102.35 times the upgradient sample location. Zinc ranged from 2.43 to 49.58. Arsenic ranged from 7.33 to 48.84. Cadmium ranged from 1.0 to 82.5. When compared to the remote background, the increases are even higher: 261.56 for lead and 91.67 for cadmium.

Strong winds observed on the evening of July 7 prompted a night-time sample run. Winds during this sampling period were the strongest observed during the field activities and lasted throughout the sampling period. This may account for the largest release occurring on the first sampling day.

Based upon the information presented in this analytical results report, it can be concluded that Richardson Flat Tailing site is the source of a release of hazardous substances to the air. Onsite soil concentrations of arsenic, cadmium, lead and zinc documented in previous reports are yielding substantial concentrations of suspended particulates containing these elements. These contaminated particulates are migrating into the air at downwind sample locations on a daily basis when compared to the upwind sample location. The same is true when comparing the downwind samples to those taken at the same times from the remote background location. Based on this information, it is recommended that the Hazard Ranking System documentation package be updated and supplied with the current information.

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TABLE 1  
RICHARDSON FLATS  
ARSENIC, CADMIUM, LEAD AND ZINC CONCENTRATIONS IN  
TOTAL ug/filter BY SAMPLE DAY

|         | AM-06 | AM-01 | AM-04 | AM-03 | AM-02 | AM-05A<br>INITIAL<br>LOCATION | AM-05B<br>STATION<br>MOVED |
|---------|-------|-------|-------|-------|-------|-------------------------------|----------------------------|
| DAY 1   | BLANK |       |       |       |       |                               |                            |
| Arsenic | --    | 1.0u  | 54    | 1.0u  | 1.0u  | 17                            |                            |
| Cadmium | --    | .5ur  | 4.8r  | .5ur  | .5u   | 5.2r                          |                            |
| Lead    | --    | 3.4   | 959   | .5u   | 8.3   | 348                           |                            |
| Zinc    | --    | 17j   | 672j  | .4uj  | 15j   | 527j                          |                            |
| DAY 2   | BLANK |       |       |       |       |                               |                            |
| Arsenic | 1.0u  | 1.0u  | 1.5   | 1.4   | 6.8   | 1.0u                          |                            |
| Cadmium | .5ur  | .5ur  | .5ur  | .5ur  | .5ur  | .5ur                          |                            |
| Lead    | .5u   | 8.90  | 30    | 26    | 147   | 14                            |                            |
| Zinc    | .4uj  | 21j   | 39j   | 34j   | 88j   | 17j                           |                            |
| DAY 3   | BLANK |       |       |       |       |                               |                            |
| Arsenic | 1.0u  | 1.0u  | 1.5   | 1.0u  | 13    | 1.4                           |                            |
| Cadmium | .5ur  | .5ur  | .5ur  | .5ur  | .8r   | .5ur                          |                            |
| Lead    | .5u   | 12    | 36    | 25    | 264   | 30                            |                            |
| Zinc    | .4uj  | 23j   | 43j   | 28j   | 169j  | 55j                           |                            |
| DAY 4   | BLANK |       |       |       |       |                               |                            |
| Arsenic | 1.0u  | 1.0u  | 1.0u  | 1.2   | 6.6   | --                            | 1.1                        |
| Cadmium | .5ur  | .5ur  | .5ur  | .5ur  | .5ur  | --                            | .5ur                       |
| Lead    | .5u   | 29    | 64    | 40    | 131   | --                            | 35                         |
| Zinc    | .4uj  | 43j   | 35j   | 36j   | 98j   | --                            | 43j                        |
| DAY 5   | BLANK |       |       |       |       |                               |                            |
| Arsenic | 1.0u  | 1.0u  | 1.5   | 1.0u  | 1.8   | --                            | 1.0u                       |
| Cadmium | .5ur  | .5ur  | .5ur  | .5ur  | .5ur  | --                            | .5ur                       |
| Lead    | .5u   | 8.0   | 27    | 30    | 48    | --                            | 16                         |
| Zinc    | .4uj  | 22j   | 27j   | 23j   | 51j   | --                            | 27j                        |

u Element is undetected. Detection limit given.  
j Matrix spike recovery was 65% for cadmium. Actual value may be higher. Duplicate relative percent of differences were out of CLP criteria for zinc.  
r Matrix spike recovery for zinc was 60%. Values given are estimates.

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## EXPLANATION OF TABLE 2

### FORMULAS:

$$\begin{array}{ccccccc} Q_{std} & = & Q_R & \times & \frac{P_a \text{ in Hg} \times 25.4}{T_a K} & \times & \frac{298K (T_{std})}{760mm(P_{std})} \\ CFM & & CFM & & & & \text{of Hg} \end{array}$$

$$\begin{array}{ccc} Vol. & = & t_{min} \times Q_{std} / 35.32 \\ std \text{ m}^3 & & CFM \end{array}$$

QRI CFM = Initial flow rate in cubic feet per minute.

QRF CFM = Final flow rate in cubic feet per minute.

QR CFM = Average flow rate in cubic feet per minute.

Ti F = Initial temperature in degrees Fahrenheit.

Tf F = Final temperature in degrees Fahrenheit.

Ta K = Average temperature converted to degrees Kelvin.

Pa in. Hg = average barometric pressure in inches of mercury.

Qstd CFM = Flow rate in cubic feet per minute at standard temperature and pressure.

t min = Total time in minutes that sampler ran.

Vol. std m<sup>3</sup> = Total volume of air sampled in cubic meters at standard temperature and pressure..

TABLE 2. CALCULATIONS OF STANDARD FLOW RATES

| DAY   | STATION<br>NUMBER | LOCATION   | FILTER # | QR<br>CFM | TAK | PA<br>INCHES | QSTD<br>CFM | T MIN | V<br>STD M <sup>3</sup> |
|-------|-------------------|------------|----------|-----------|-----|--------------|-------------|-------|-------------------------|
| DAY 1 |                   |            |          |           |     |              |             |       |                         |
|       | AM-01             | BACKGROUND | AM-01-1  | 43        | 290 | 23.25        | 34.33       | 552   | 536.60                  |
|       | AM-02             | SE         | AM-02-1  | 41        | 287 | 23.25        | 33.08       | 549   | 514.25                  |
|       | AM-03             | BLANK      | AM-03-1  | 0.0       | --  | --           | --          | --    | --                      |
|       | AM-04             | DAM        | AM-04-1  | 42        | 288 | 23.25        | 33.77       | 609   | 582.34                  |
|       | AM-05             | NW         | AM-05-1  | 41        | 289 | 23.25        | 32.85       | 391   | 363.72                  |
| DAY 2 |                   |            |          |           |     |              |             |       |                         |
|       | AM-01             | BACKGROUND | AM-01-2  | 40.5      | 289 | 23.25        | 32.45       | 704   | 646.89                  |
|       | AM-02             | SE         | AM-02-2  | 39        | 288 | 23.25        | 31.36       | 696   | 617.99                  |
|       | AM-03             | DUPLICATE  | AM-03-2  | 39.5      | 290 | 23.25        | 31.54       | 590   | 526.93                  |
|       | AM-04             | DAM        | AM-04-2  | 42.5      | 290 | 23.25        | 33.94       | 610   | 586.17                  |
|       | AM-05             | NW         | AM-05-2  | 41        | 288 | 23.25        | 32.96       | 699   | 652.48                  |
|       | AM-06             | BLANK      | AM-06-2  | 0.0       | --  | --           | --          | --    | --                      |
| DAY 3 |                   |            |          |           |     |              |             |       |                         |
|       | AM-01             | BACKGROUND | AM-01-3  | 42.5      | 291 | 23.35        | 33.96       | 650   | 625.13                  |
|       | AM-02             | SE         | AM-02-3  | 42        | 290 | 23.35        | 33.68       | 589   | 561.73                  |
|       | AM-03             | DUPLICATE  | AM-03-3  | 39.5      | 290 | 23.35        | 31.68       | 678   | 608.12                  |
|       | AM-04             | DAM        | AM-04-3  | 43        | 290 | 23.35        | 34.48       | 674   | 658.10                  |
|       | AM-05             | NW         | AM-05-3  | 40.5      | 290 | 23.35        | 32.48       | 658   | 605.13                  |
|       | AM-06             | BLANK      | AM-06-3  | 0.0       | --  | --           | --          | --    | --                      |
| DAY 4 |                   |            |          |           |     |              |             |       |                         |
|       | AM-01             | BACKGROUND | AM-01-4  | 45.5      | 293 | 23.35        | 36.11       | 726   | 742.41                  |
|       | AM-02             | SE         | AM-02-4  | 40        | 293 | 23.35        | 31.75       | 624   | 560.97                  |
|       | AM-03             | DUPLICATE  | AM-03-4  | 40        | 293 | 23.35        | 31.75       | 665   | 597.83                  |
|       | AM-04             | DAM        | AM-04-4  | 42        | 293 | 23.35        | 33.34       | 661   | 623.95                  |
|       | AM-05             | W          | AM-05-4  | 37.5      | 292 | 23.35        | 29.87       | 630   | 532.79                  |
|       | AM-06             | BLANK      | AM-06-4  | 0.0       | --  | --           | --          | --    | --                      |
| DAY 5 |                   |            |          |           |     |              |             |       |                         |
|       | AM-01             | BACKGROUND | AM-01-5  | 40.5      | 293 | 23.40        | 32.21       | 688   | 627.58                  |
|       | AM-02             | SE         | AM-02-5  | 41        | 296 | 23.40        | 32.28       | 658   | 601.47                  |
|       | AM-03             | DUPLICATE  | AM-03-5  | 38        | 296 | 23.40        | 29.92       | 642   | 543.90                  |
|       | AM-04             | DAM        | AM-04-5  | 42.5      | 296 | 23.40        | 33.46       | 642   | 608.31                  |
|       | AM-05             | W          | AM-05-5  | 39        | 292 | 23.40        | 31.13       | 586   | 516.50                  |
|       | AM-06             | BLANK      | AM-06-5  | 0.0       | --  | --           | --          | --    | --                      |



Revised

TABLE 3  
AVERAGE AIRBORNE CONCENTRATIONS OF ARSENIC, CADMIUM, LEAD AND ZINC  
PER DAY IN ug/m<sup>3</sup>

|         | BACKGROUND<br>AM-01 | DAM<br>AM-04 | DUPLICATE<br>AM-03 | SE<br>AM-02 | NW<br>AM-05A | W<br>AM-05B |
|---------|---------------------|--------------|--------------------|-------------|--------------|-------------|
| DAY 1   |                     |              |                    |             |              |             |
| Arsenic | .0019 u             | .0928        | --                 | .0019 u     | .0467        | --          |
| Cadmium | .0009 ur            | .0825 r      | --                 | .0010 u     | .0143 r      | --          |
| Lead    | .0063               | 1.6478       | --                 | .0161       | .9560        | --          |
| Zinc    | .0317 j             | 1.1546 j     | --                 | .0292 j     | 1.4478 j     | --          |
| DAY 2   |                     |              |                    |             |              |             |
| Arsenic | .0015 u             | .0026        | .0027              | .0110       | .0015        | --          |
| Cadmium | .0007 ur            | .0009 ur     | .0009 ur           | .0008 ur    | .0008 ur     | --          |
| Lead    | .0138               | .0512        | .0493              | .2379       | .0214        | --          |
| Zinc    | .0325 j             | .0666 j      | .0645 j            | .1424 j     | .0260 j      | --          |
| DAY 3   |                     |              |                    |             |              |             |
| Arsenic | .0016 u             | .0023        | .0016 u            | .0231       | .0023        | --          |
| Cadmium | .0008 ur            | .0008 ur     | .0008 ur           | .0014 r     | .0008 ur     | --          |
| Lead    | .0192               | .0547        | .0411              | .4698       | .0496        | --          |
| Zinc    | .0368 j             | .0653 j      | .0461 j            | .3007 j     | .0909 j      | --          |
| DAY 4   |                     |              |                    |             |              |             |
| Arsenic | .0013 u             | .0016 u      | .0020              | .0118       | --           | .0021       |
| Cadmium | .0007 ur            | .0008 ur     | .0008 ur           | .0009 ur    | --           | .0009 u     |
| Lead    | .0391               | .1026        | .0669              | .2335       | --           | .0657       |
| Zinc    | .0580 j             | .0561 j      | .0602 j            | .1747 j     | --           | .0807 j     |
| DAY 5   |                     |              |                    |             |              |             |
| Arsenic | .0016 u             | .0025        | .0018 u            | .0029       | --           | .0019 u     |
| Cadmium | .0008 ur            | .0008 ur     | .0009 ur           | .0008 ur    | --           | .0010 u     |
| Lead    | .0127               | .0444        | .0551              | .0799       | --           | .0309       |
| Zinc    | .0350 j             | .0444 j      | .0423 j            | .0849 j     | --           | .0522 j     |

-- Sample not run.

u Element is undetected.

j Matrix spike recovery was 65% for cadmium. Actual value may be higher.

r Duplicate relative percent of differences were out of CLP criteria for zinc.

r Matrix spike recovery for zinc was 60%. Values given are estimates.

Ref 2

TABLE 4. COMPARISON OF DOWNGRADIENT VS. UPGRADIENT AND BACKGROUND  
AIRBORNE METALS CONCENTRATION BY SAMPLE DAY IN  $\mu\text{g}/\text{m}^3$

| DAY                           | PREVAILING<br>WIND | REMOTE<br>BCKGRD | UPGRADIENT<br>LOCATION | PRIMARY<br>DN GRADIENT<br>LOCATION | SECONDARY<br>DN GRADIENT<br>LOCATION | CONTAMINANT INCREASE<br>(TIMES UPGRADIENT) |           |                      |
|-------------------------------|--------------------|------------------|------------------------|------------------------------------|--------------------------------------|--|-----------|----------------------|
|                               |                    |                  |                        |                                    |                                      | PRIMARY                                    | SECONDARY | REMOTE<br>BACKGROUND |
| 1                             | SE                 | AM-01            | AM-02                  | AM-04                              | AM-05A                               |  |           |                      |
|                               |                    | AS.0019          | .0019                  | .0928                              | .0467                                | 48.84                                      | 24.58     | 48.84                |
|                               |                    | CD.0009          | .0010                  | .0825                              | .0143                                | 82.50                                      | 14.30     | 91.67                |
|                               |                    | PB.0063          | .0161                  | 1.6478                             | .9560                                | 102.35                                     | 59.38     | 261.56               |
|                               |                    | ZN.0317          | .0292                  | 1.1546                             | 1.4478                               | 39.54                                      | 49.58     | 36.42                |
| 2                             | WNW                | AM-01            | AM-05A                 | AM-02                              |                                      |  |           |                      |
|                               |                    | AS.0015          | .0015                  | .0110                              | --                                   | 7.33                                       | --        | 7.33                 |
|                               |                    | CD.0007          | .0008                  | .0008                              | --                                   | 1.0  | --        | 1.14                 |
|                               |                    | PB.0138          | .0214                  | .2379                              | --                                   | 11.12                                      | --        | 17.24                |
|                               |                    | ZN.0325          | .0260                  | .1424                              | --                                   | 5.48                                       | --        | 4.38                 |
| 3                             | WNW                | AM-01            | AM-05A                 | AM-02                              | --                                   |  |           |                      |
|                               |                    | AS.0016          | .0023                  | .0231                              | --                                   | 10.04                                      | --        | 14.44                |
|                               |                    | CD.0008          | .0008                  | .0014                              | --                                   | 1.75                                       | --        | 1.75                 |
|                               |                    | PB.0192          | .0496                  | .4698                              | --                                   | 9.47                                       | --        | 24.47                |
|                               |                    | ZN.0368          | .0909                  | .3007                              | --                                   | 3.31                                       | --        | 8.17                 |
| 4                             | WNW                | AM-01            | AM-04                  | AM-02                              | --                                   |  |           |                      |
|                               |                    | AS.0013          | .0016                  | .0118                              | --                                   | 7.38                                       | --        | 9.08                 |
|                               |                    | CD.0007          | .0008                  | .0009                              | --                                   | 1.125                                      | --        | 1.29                 |
|                               |                    | PB.0391          | .1026                  | .2335                              | --                                   | 2.28                                       | --        | 5.97                 |
|                               |                    | ZN.0580          | .0561                  | .1747                              | --                                   | 3.11                                       | --        | 3.01                 |
| INCREASE VS REMOTE BACKGROUND |                    |                  |                        |                                    |                                      |  |           |                      |
| 5                             | NONE               | AM-01            | AM-02                  | AM-04                              | AM-05B                               | AM-02                                      | AM-04     | AM-05                |
|                               |                    | AS.0016          | .0029                  | .0025                              | .0019                                | 1.81                                       | 1.56      | 1.19                 |
|                               |                    | CD.0008          | .0008                  | .0008                              | .0010                                | 1.0  | 1.0       | 1.25                 |
|                               |                    | PB.0127          | .0799                  | .0444                              | .0309                                | 6.29                                       | 3.49      | 2.43                 |
|                               |                    | ZN.0350          | .0849                  | .0444                              | .0522                                | 2.43                                       | 1.27      | 1.49                 |

-- No secondary downgradient

Revised

TABLE 5  
SOIL CONCENTRATION OF TASK 1 AND 2 METALS  
IN RICHARDSON FLAT AREA

|           | CNTY RD<br>2'<br>S0-01 | CNTY RD<br>10'<br>S0-02 | US40<br>2'<br>S0-03 | US40<br>50'<br>S0-04 | HOTEL<br>S0-05 | WESTERN<br>U.S.<br>AVERAGE |
|-----------|------------------------|-------------------------|---------------------|----------------------|----------------|----------------------------|
| Aluminum  | 3790*                  | 11900*                  | 11300*              | 10500*               | 13200*         | 58000                      |
| Antimony  | 18e                    | 70e                     | 89e                 | 40e                  | 104e           | .47                        |
| Arsenic   | 87                     | 7.7                     | 7.5                 | 2.1u                 | 188            | 5.5                        |
| Barium    | 95                     | 200                     | 144                 | 668                  | 225            | 580                        |
| Beryllium | .4ue                   | 5.2e                    | 43e                 | 1.4e                 | 1.0e           | .68                        |
| Cadmium   | 3.9*                   | 12*                     | 12*                 | 4.5*                 | 38*            | .35                        |
| Calcium   | 46900*                 | 14300*                  | 12900*              | 6350*                | 14900*         | --                         |
| Chromium  | 17*                    | 443*                    | 743*                | 4.3*                 | 21*            | 41                         |
| Cobalt    | [2.9]e                 | 14e                     | 159e                | 11e                  | 21e            | 7.1                        |
| Copper    | 21                     | 44                      | 100                 | 15                   | 222            | 21                         |
| Iron      | 10600                  | 94200                   | 10300               | 33900                | 46100          | 21000                      |
| Lead      | 477*                   | 133*                    | 418*                | 13*                  | 3479*          | 17                         |
| Magnesium | 14200*                 | 55800*                  | 36700*              | 3560*                | 5550*          | --                         |
| Manganese | 284                    | 8320                    | 15400               | 112                  | 1730           | 380                        |
| Mercury   | 1.0*                   | 0.5*                    | 0.2*                | 0.5*                 | 3.9*           | .05                        |
| Nickel    | 12                     | 44                      | 52                  | 21                   | 34             | 15                         |
| Potassium | [436]e                 | 1480e                   | [965]e              | 1160e                | 1960e          | --                         |
| Selenium  | 1.0u                   | 1.0u                    | 1.0u                | 1.0u                 | 6.9            | .23                        |
| Silver    | 2.0u                   | 2.0u                    | 2.0u                | 2.1u                 | 18             | .5                         |
| Sodium    | [336]                  | 5620                    | 5130                | [976]                | 1320           | --                         |
| Thallium  | 2.4                    | 2.0u                    | 2.0u                | 2.1u                 | 13             | .2                         |
| Vanadium  | 11e                    | 561e                    | 1390e               | 81e                  | 12e            | 70                         |
| Zinc      | 440*                   | 331*                    | 84*                 | 96*                  | 4630*          | 55                         |

r Spike recovery beyond the  $\pm 25\%$  control limit.

\* Duplicate results exceeded the relative percent difference limit of  $\pm 35\%$ .  
Consider an estimate.

e An interference may be present for these elements.

[ ] Results is below CLP contract detection limit but above the detection limit for t  
instrument.

Ref 2

TABLE 6: AIR SAMPLING DATA

| LOCATION | DATE    | START<br>TIME | STOP<br>TIME | COMMENTS                             |
|----------|---------|---------------|--------------|--------------------------------------|
| AM-01    | 7/8/86  | 1745          | 0257         | Blow down, sample not used           |
| AM-02    | 7/8/86  | 2125          | 0634         |                                      |
| AM-03    | 7/8/86  | 2012          |              |                                      |
| AM-04    | 7/8/86  | 1929          | 0538         |                                      |
| AM-05    | 7/8/86  | 2032          | 0303         |                                      |
| AM-01    | 7/9/86  | 1125          | 2309         |                                      |
| AM-02    | 7/9/86  | 1410          | 0146         |                                      |
| AM-03    | 7/9/86  | 1333          | 2323         |                                      |
| AM-04    | 7/9/86  | 1315          | 2325         |                                      |
| AM-05    | 7/9/86  | 1504          | 0243         |                                      |
| AM-01    | 7/10/86 | 1005          | 2055         | Sheep grazing in area of<br>sampler  |
| AM-02    | 7/10/86 | 1230          | 2219         |                                      |
| AM-03    | 7/10/86 | 1110          | 2228         |                                      |
| AM-04    | 7/10/86 | 1110          | 2224         |                                      |
| AM-05    | 7/10/86 | 1158          | 2257         |                                      |
| AM-01    | 7/11/86 | 1030          | 2236         |                                      |
| AM-02    | 7/11/86 | 1244          | 2308         |                                      |
| AM-03    | 7/11/86 | 1123          | 2228         |                                      |
| AM-04    | 7/11/86 | 1128          | 2229         |                                      |
| AM-05    | 7/11/86 | 1214          | 2244         |                                      |
|          |         |               |              | Sampler moved 300 yards to<br>south. |
| AM-01    | 7/12/86 | 1025          | 2153         |                                      |
| AM-02    | 7/12/86 | 1218          | 2316         |                                      |
| AM-03    | 7/12/86 | 1129          | 2211         |                                      |
| AM-04    | 7/12/86 | 1129          | 2211         |                                      |
| AM-05    | 7/12/86 | 1154          | 2140         |                                      |

Ref 2

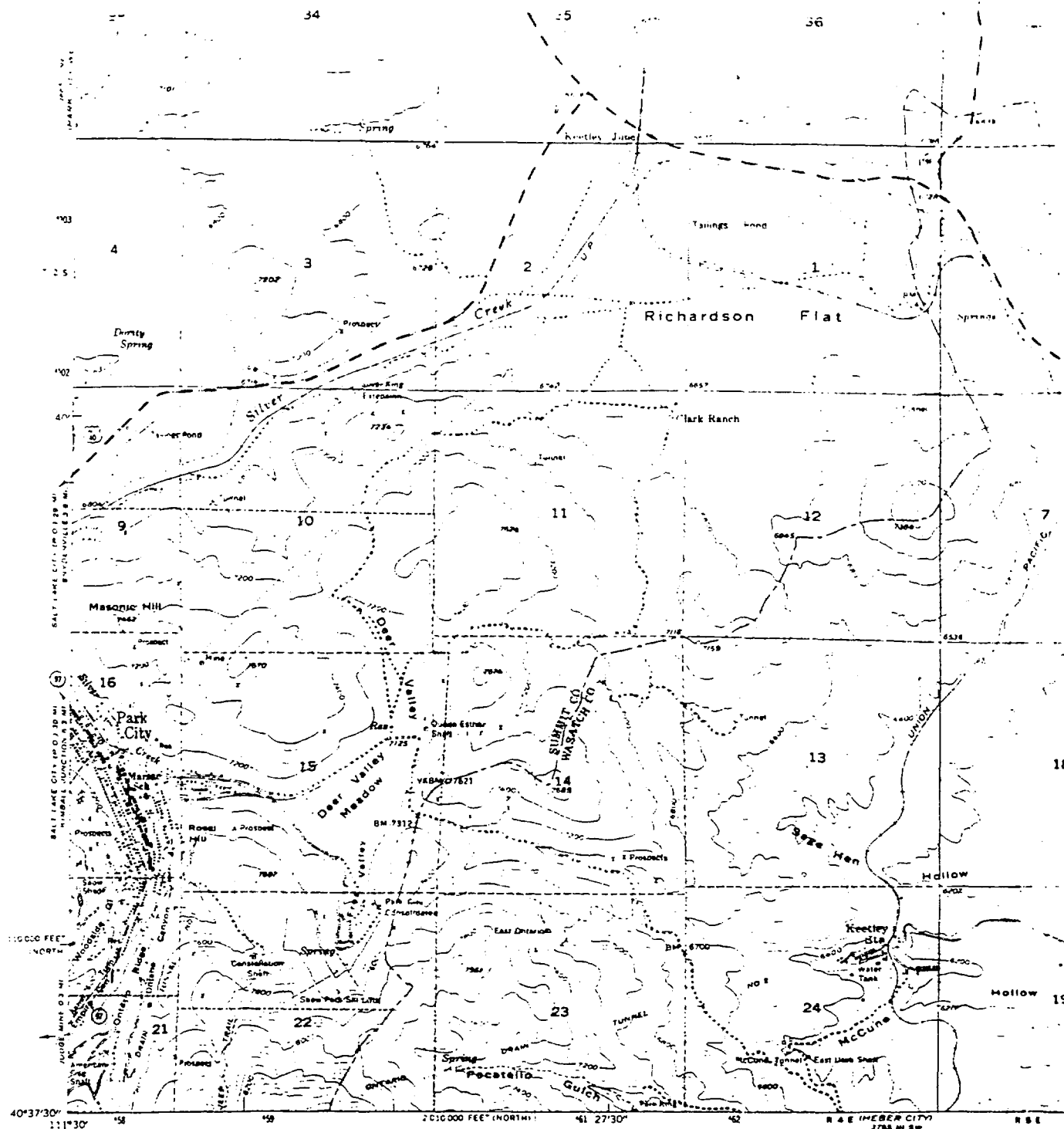
## REFERENCES

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- Daines, R.H., H. Moto, and D.M. Chilko. Atmospheric Lead: Its Relationship to Traffic Volume and Proximity to Highways. Environ. Sci. and Technol., 4:318, 1970.
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- Shacklette, H.T., and Boerngen, J.G.; 1984: Element Concentrations in Soils and other Surficial Materials of the Conterminous United States. U.S. Geol. Surv. Professional Paper 1270. 105pp.

Ref 2

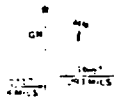
## APPENDIX I

### FIGURES



40°37'30" N  
111°1'30" W

Mapped, edited, and published by the Geological Survey  
 Control by USGS and USC&GS  
 Topography from aerial photographs by multiplex methods  
 Aerial photographs taken 1953 Field check 1955  
 Photocopy projection 1957 North American datum  
 10,000-foot grid based on Utah coordinate system,  
 north and central zones  
 Dashed land lines indicate approximate locations



1:250,000  
 HORIZONTAL INTERVAL 40 FEET  
 NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS  
 FOR SALE BY U.S. GEOLOGICAL SURVEY DENVER, COLORADO 80225 OR RESTON VIRGINIA 22092  
 A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

# FIELD INVESTIGATIONS OF UNCONTROLLED HAZARDOUS WASTE SITES TASK REPORT TO THE E.P.A.

TITLE:  
**Park City Utah Area Map**

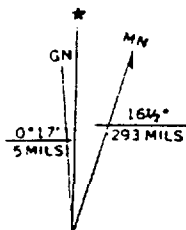
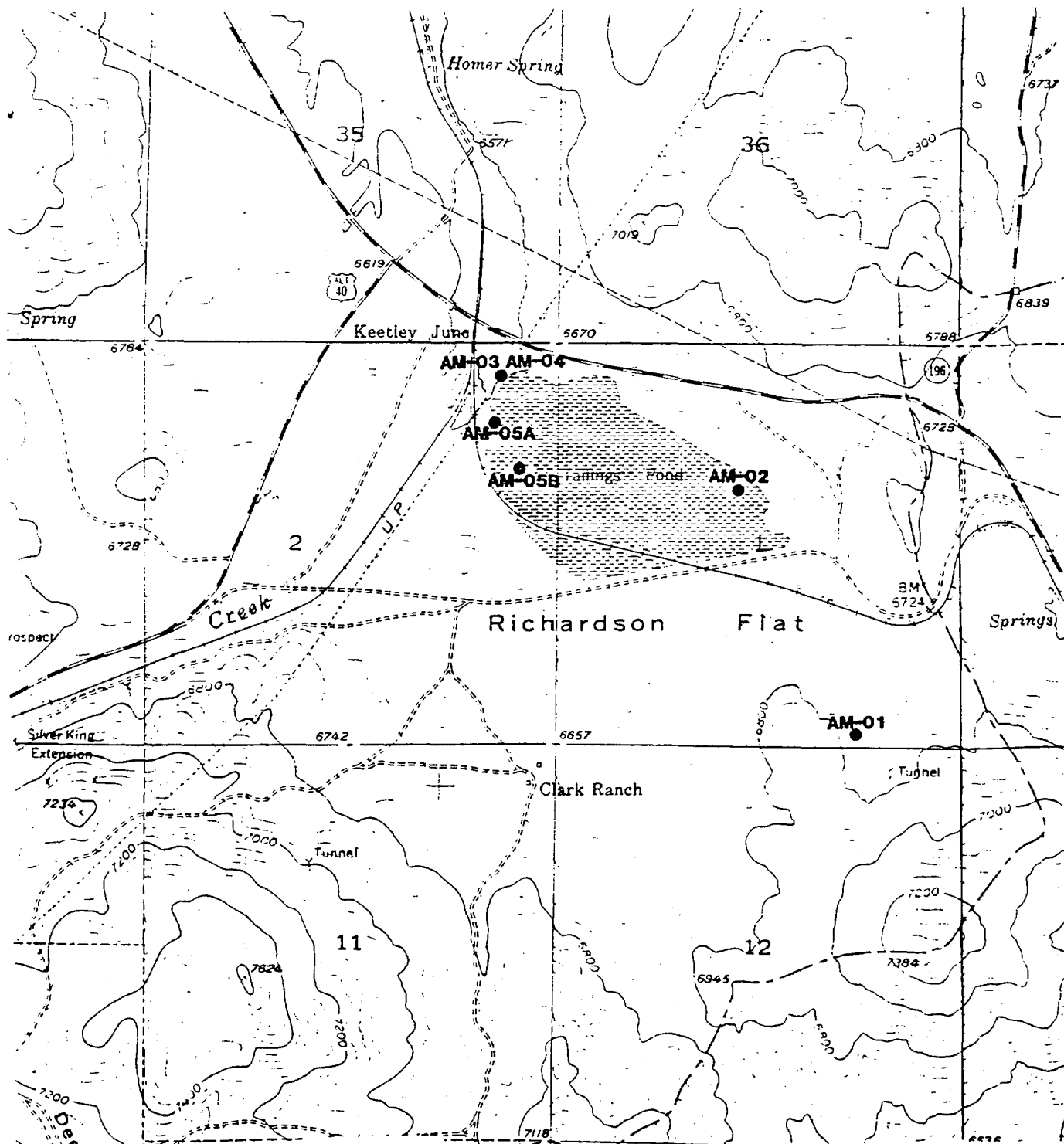
T.D.D. R8-8605-12

ecology and environment, inc.  
 DENVER, COLORADO

FIG. 1

Date \_\_\_\_\_ Drawn by \_\_\_\_\_ Scale \_\_\_\_\_

Box 2



UTM GRID AND 1955 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

CONTOUR INTERVAL 40 FEET

**FIELD INVESTIGATIONS OF UNCONTROLLED  
HAZARDOUS WASTE SITES  
TASK REPORT TO THE E.P.A.**

**TITLE: Richardson Flat**

**Air Sample Locations**

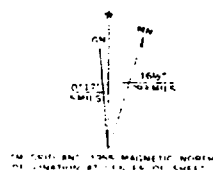
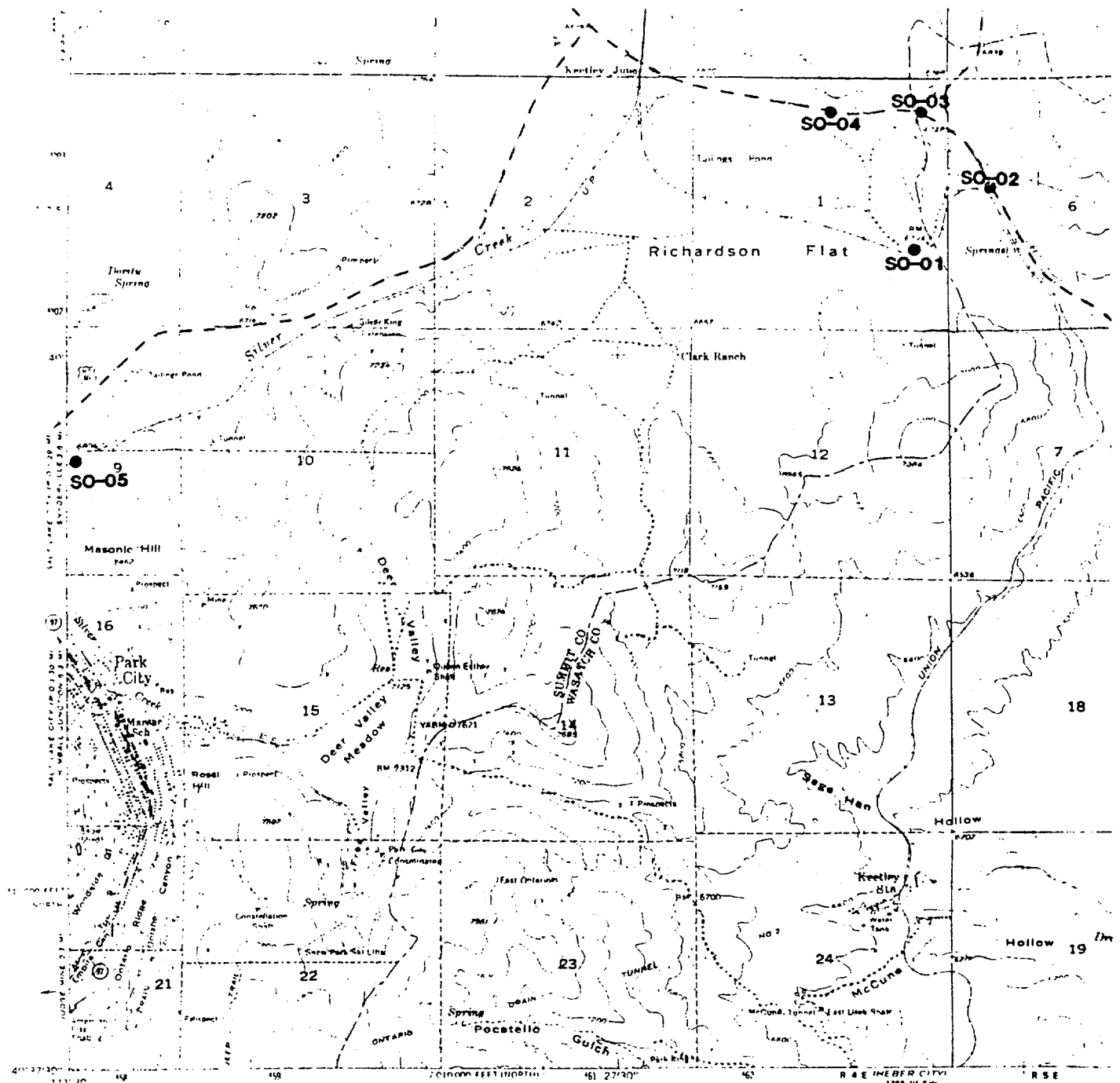
**T.D.D R8-8605-12**

**ecology and environment, inc.  
DENVER, COLORADO**

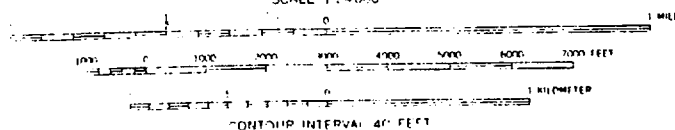
**FIG.2**

Date \_\_\_\_\_ Drawn by \_\_\_\_\_ Scale \_\_\_\_\_





SCALE 1:24,000



**FIELD INVESTIGATIONS OF UNCONTROLLED  
HAZARDOUS WASTE SITES  
TASK REPORT TO THE E.P.A.**

**TITLE: Richardson Flat  
Soil Sample Locations**

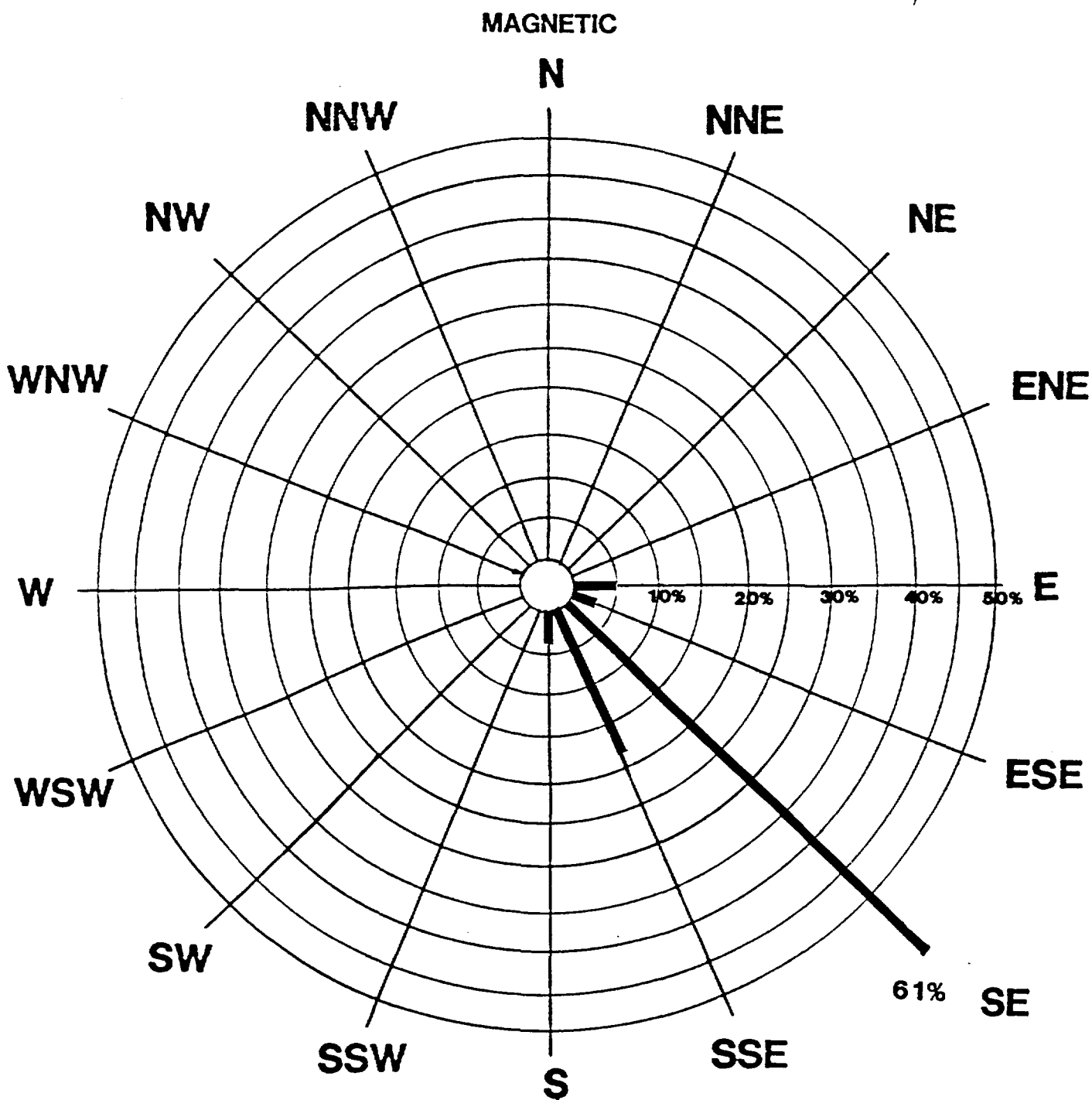
**T.D.D. R8-8605-12**

**ecology and environment, inc.  
DENVER, COLORADO**

**FIG.3**

Date \_\_\_\_\_ Drawn by \_\_\_\_\_ Scale \_\_\_\_\_

Ref. 2



FIELD INVESTIGATIONS OF UNCONTROLLED  
HAZARDOUS WASTE SITES  
TASK REPORT TO THE E.P.A.

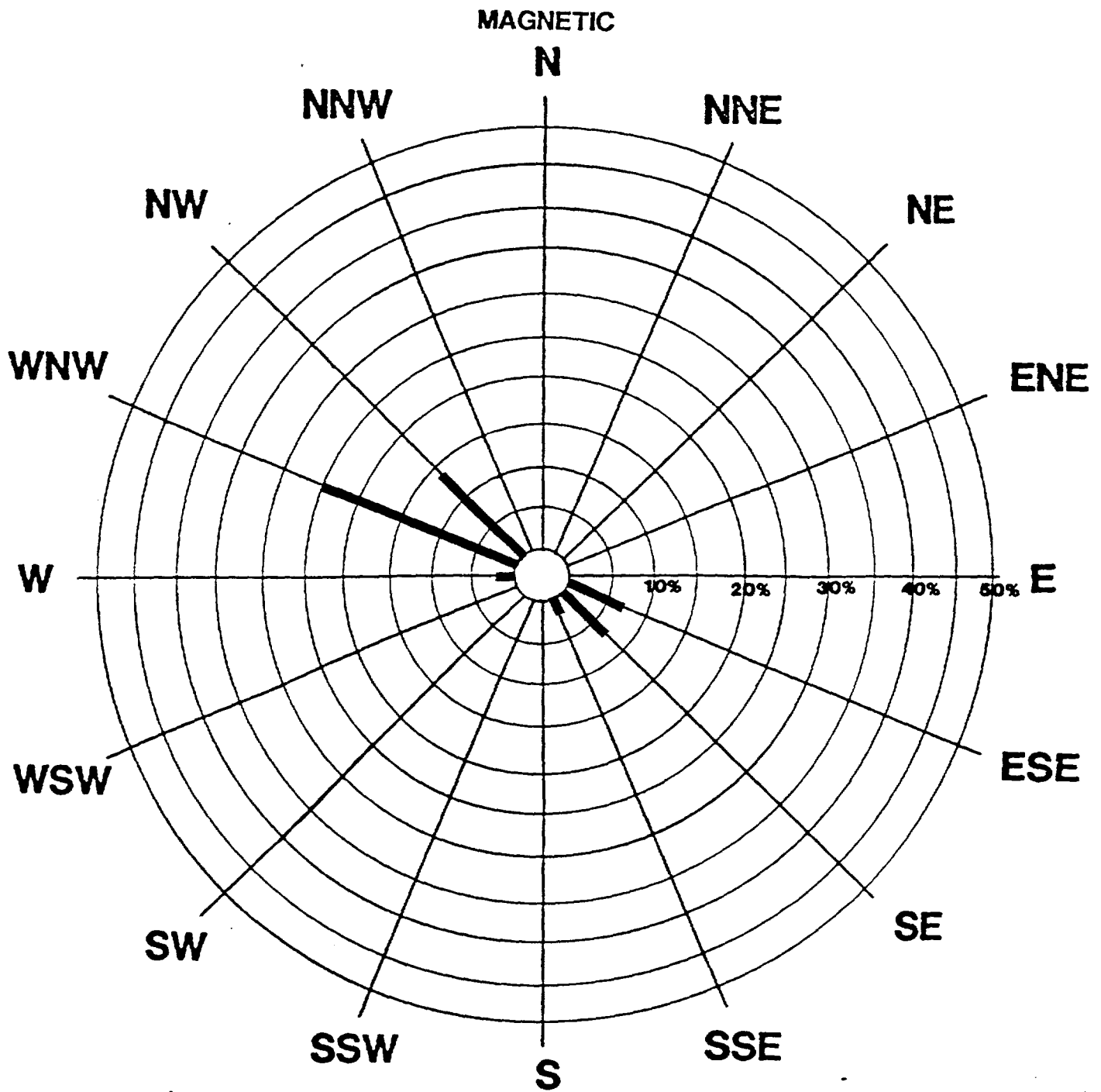
TITLE: Richardson Flats Wind Rose in % of  
Sample Time for DAY 1 1800 - 0700 Hours

July 8-9, 1986

T.B.S. R8-8605-12

ecology and environment, inc.  
DENVER, COLORADO

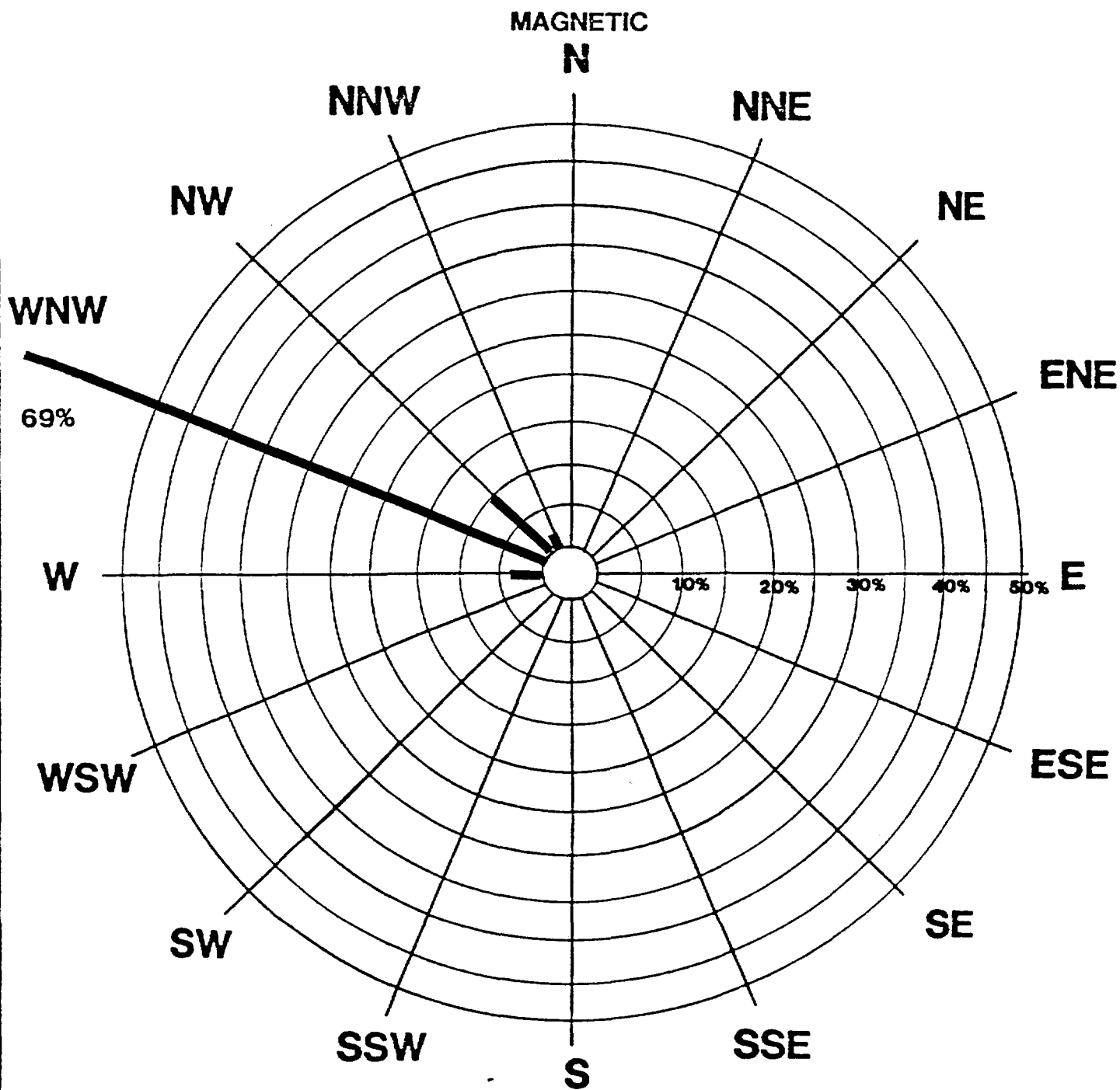
FIG.4



37.5 % Calm

|  |       |
|--|-------|
| FIELD INVESTIGATIONS OF UNCONTROLLED<br>HAZARDOUS WASTE SITES<br>TASK REPORT TO THE E.P.A.             |       |
| TITLE: Richardson Flats Wind Rose in % of<br>Sample Time for DAY 2 1100 -0300 Hours<br>July 9-10, 1986 |       |
| I.D. # R8-8605-12  |       |
| ecology and environment, inc.<br>DENVER, COLORADO  | FIG.5 |

R-2



17.3 % CALM

FIELD INVESTIGATIONS OF UNCONTROLLED  
HAZARDOUS WASTE SITES  
TASK REPORT TO THE E.P.A.

TITLE: Richardson Flats Wind Rose in % of  
Sample Time for DAY 3 1000-2300 Hours

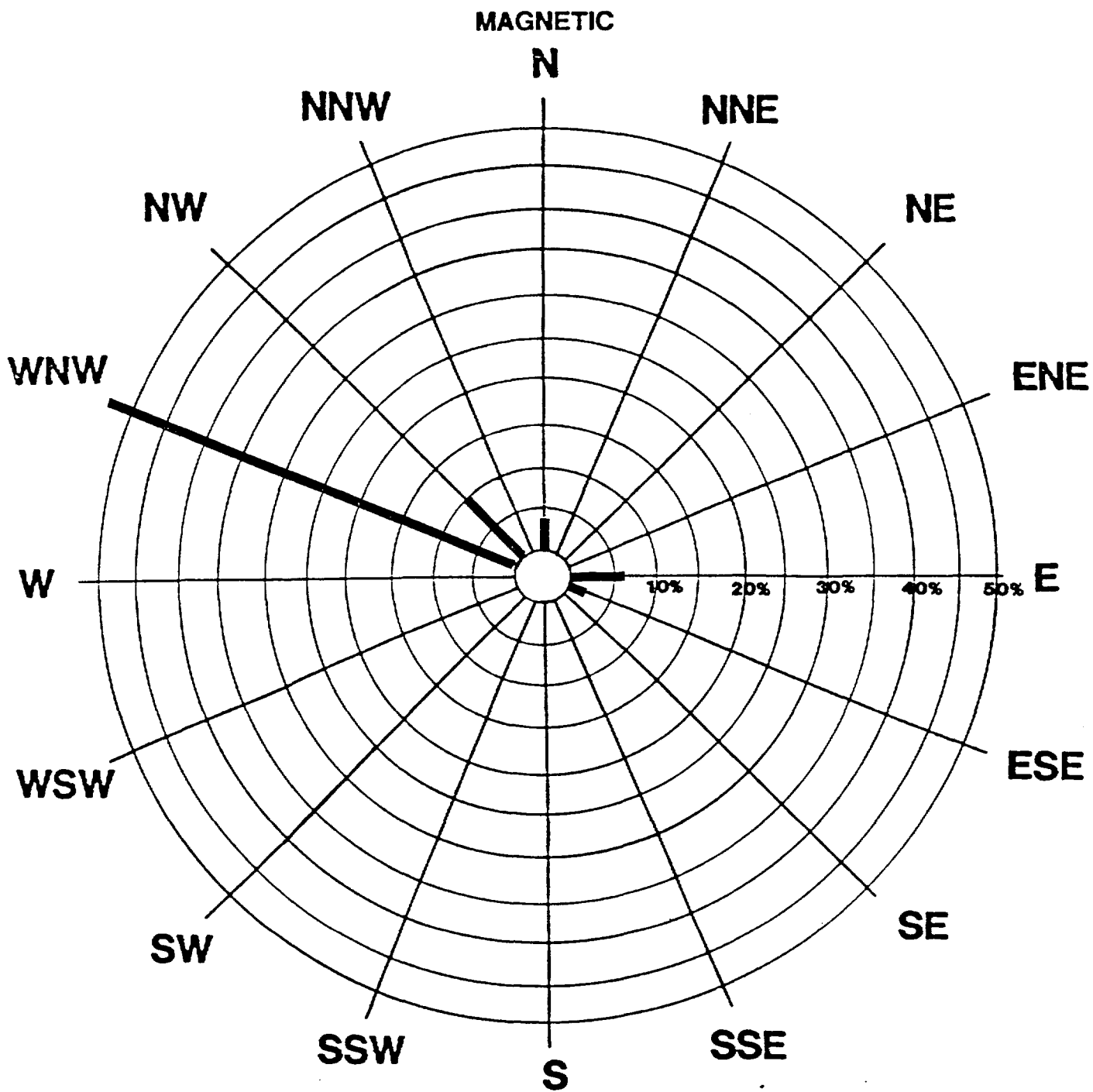
July 10, 1986

T.B.S. R8-8605-12

ecology and environment, inc.  
DENVER, COLORADO

FIG.6

Drawn by \_\_\_\_\_ Date \_\_\_\_\_



21.1 % CALM

FIELD INVESTIGATIONS OF UNCONTROLLED  
HAZARDOUS WASTE SITES  
TASK REPORT TO THE E.P.A.

TITLE: Richardson Flats Wind Rose in % of  
Sample Time for DAY 4 1000-2300 Hours

July 11, 1986

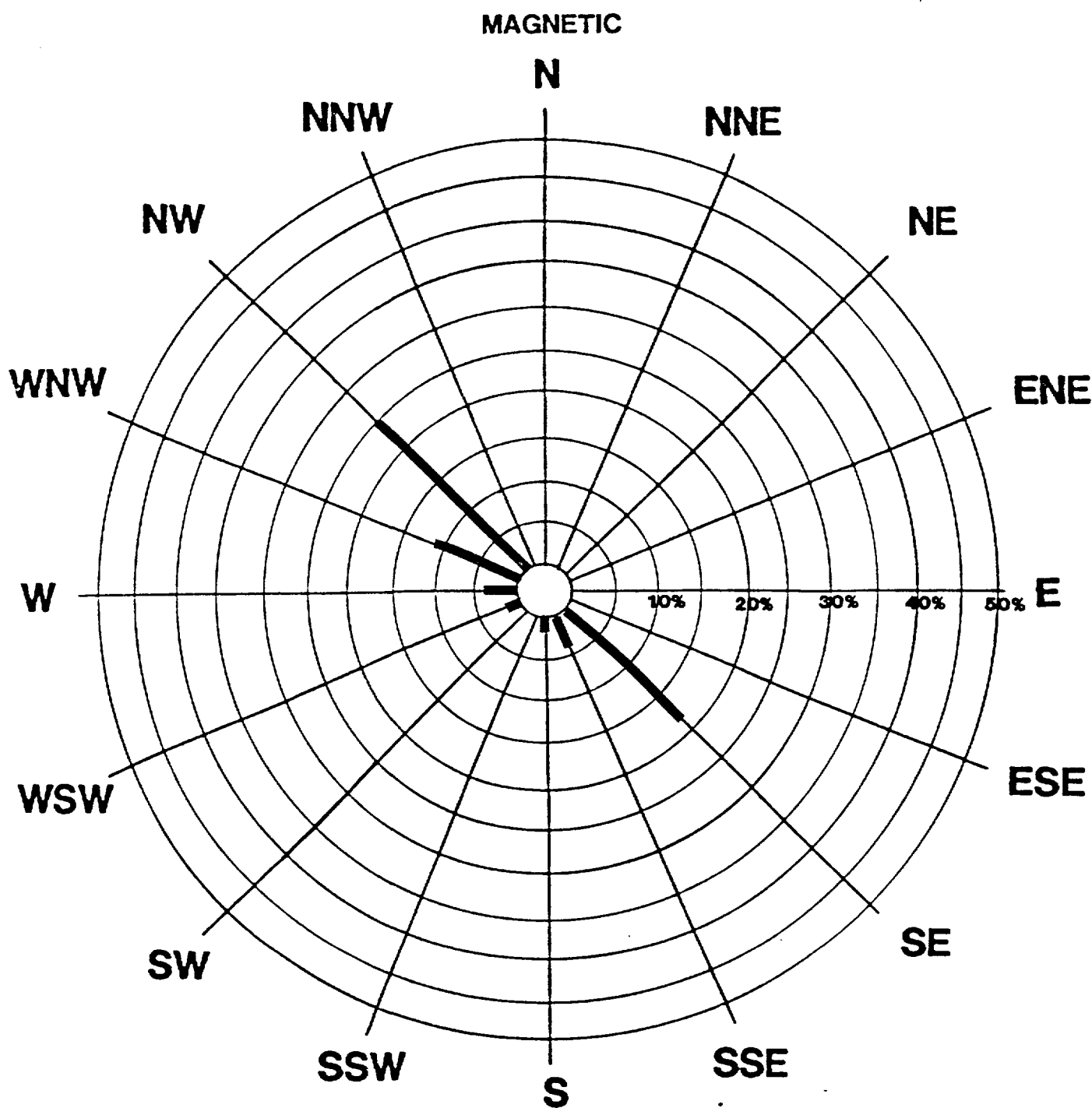
T.S.B. R8-8605-12

ecology and environment, inc.  
DENVER, COLORADO

FIG.7

Date \_\_\_\_\_ Drawn by \_\_\_\_\_ Scale \_\_\_\_\_

Ref. 2



21.4 % CALM

|   |                |
|---|----------------|
| <b>FIELD INVESTIGATIONS OF UNCONTROLLED<br/>HAZARDOUS WASTE SITES</b><br>TASK REPORT TO THE E.P.A.  |                |
| TITLE: Richardson Flats Wind Rose in % of<br>Sample Time for DAY 5 1000-2400 Hours<br>July 12, 1986 |                |
| T.S.O. R8-8605-12   |                |
| ecology and environment, inc.<br>DENVER, COLORADO   | FIG.8          |
| Date _____  | Drawn by _____ |

% OF SAMPLE PERIOD

ROMANUSKI FLATS WIND SPEED DAY 1

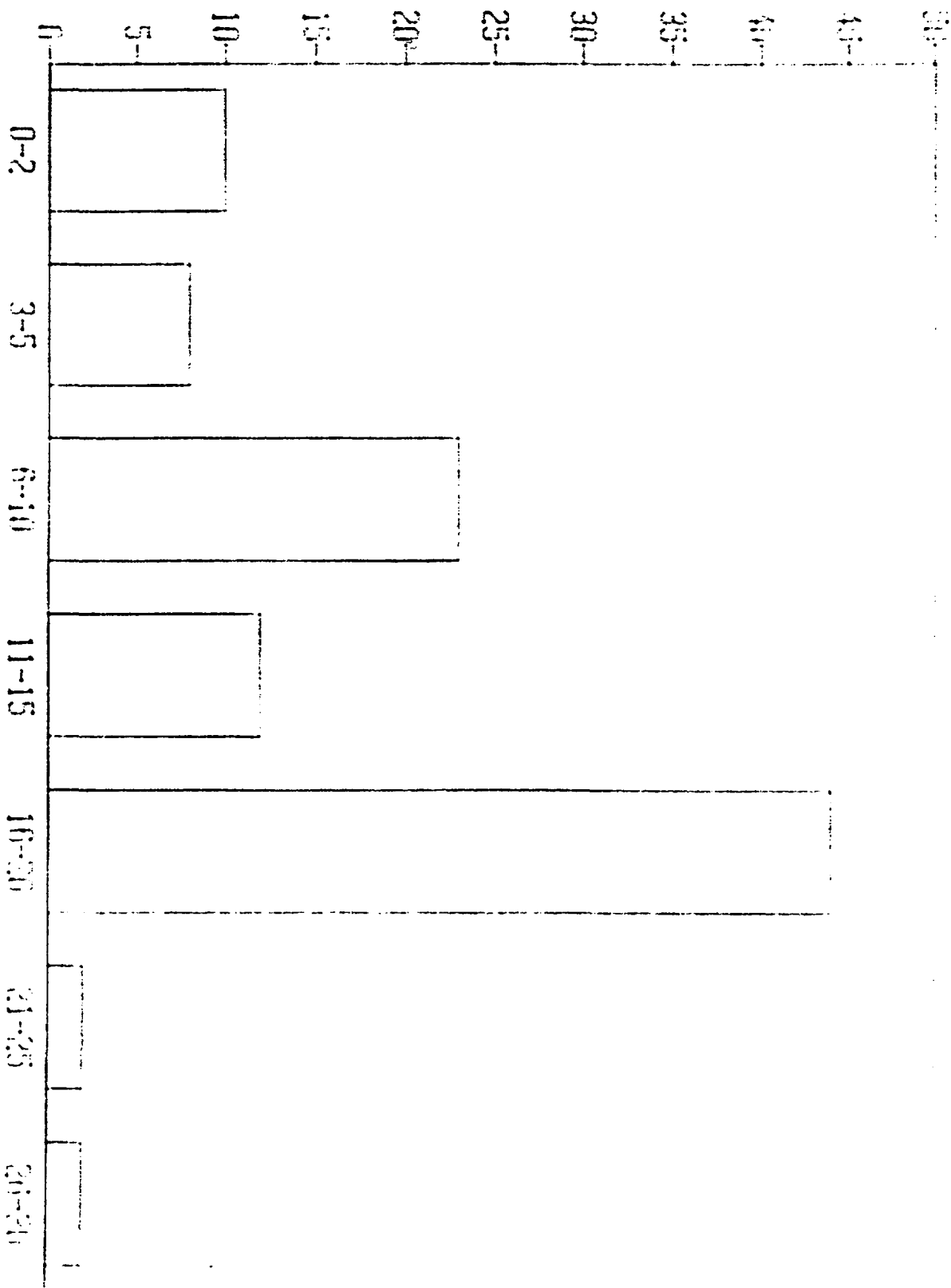
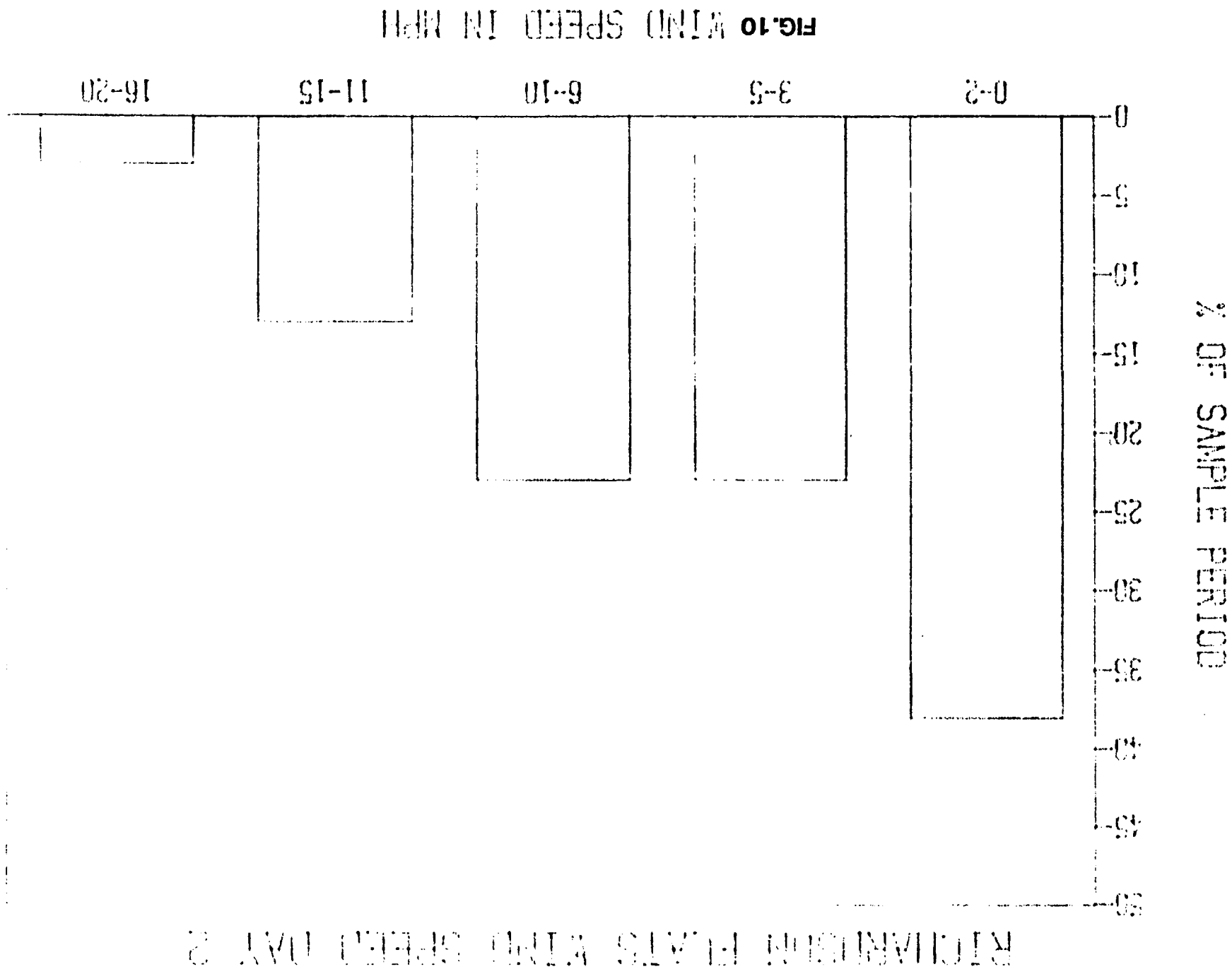


FIG.9 WIND SPEED IN MPH

2/2

Ref. 2





# RICHARDSON FLATS WIND SPEED DAY 3

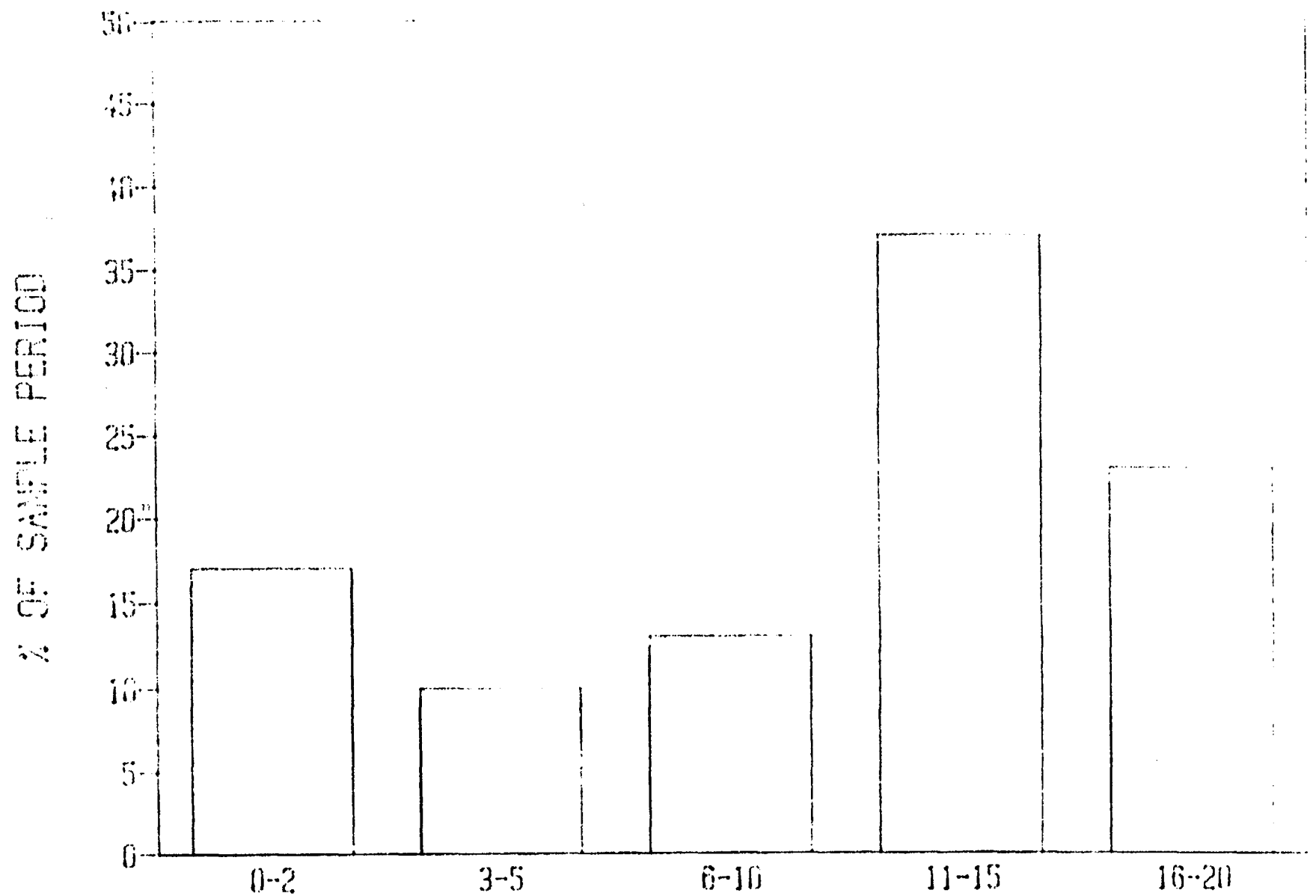


FIG.11 WIND SPEED IN MPH

Ref. 2

Ref 2

# RICHMOND FLATS WIND SPEED DAY 4

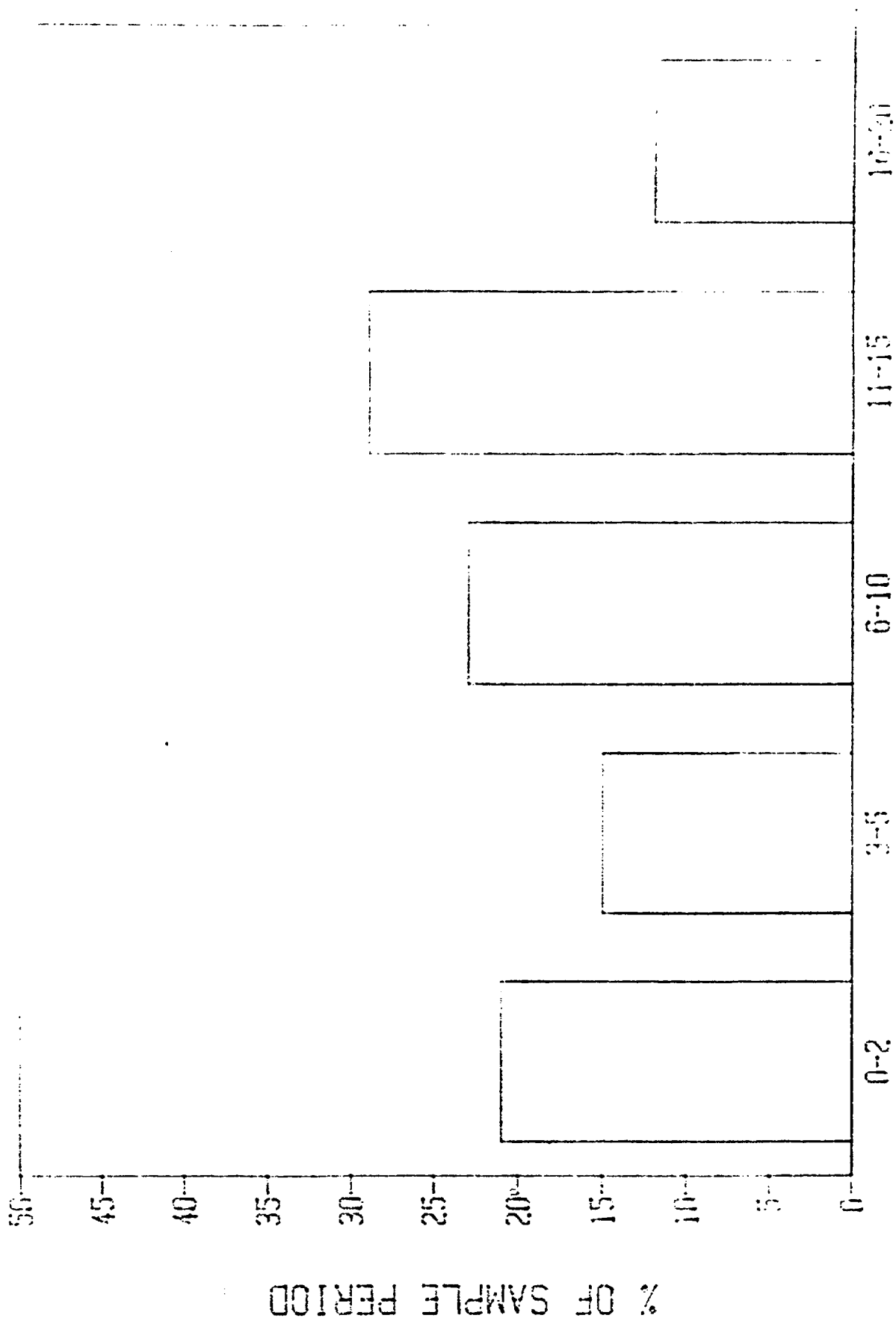


FIG.12 WIND SPEED IN MPH

# RICHMOND FLATS WIND SPEED DAY 5

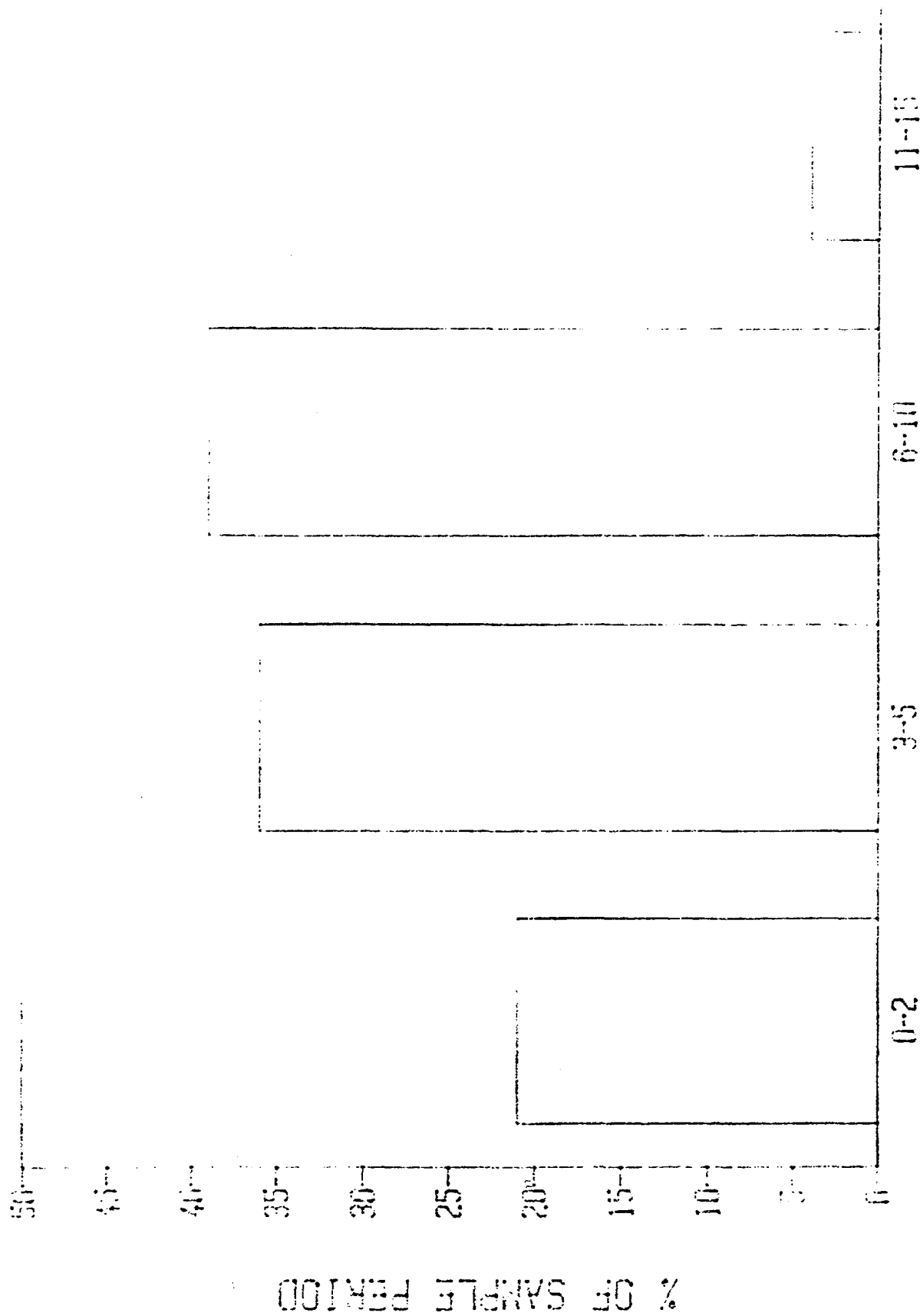


FIG.13 WIND SPEED IN MPH

Ref 2

# RICHARDSON FLATS WIND SPEED DAY 1

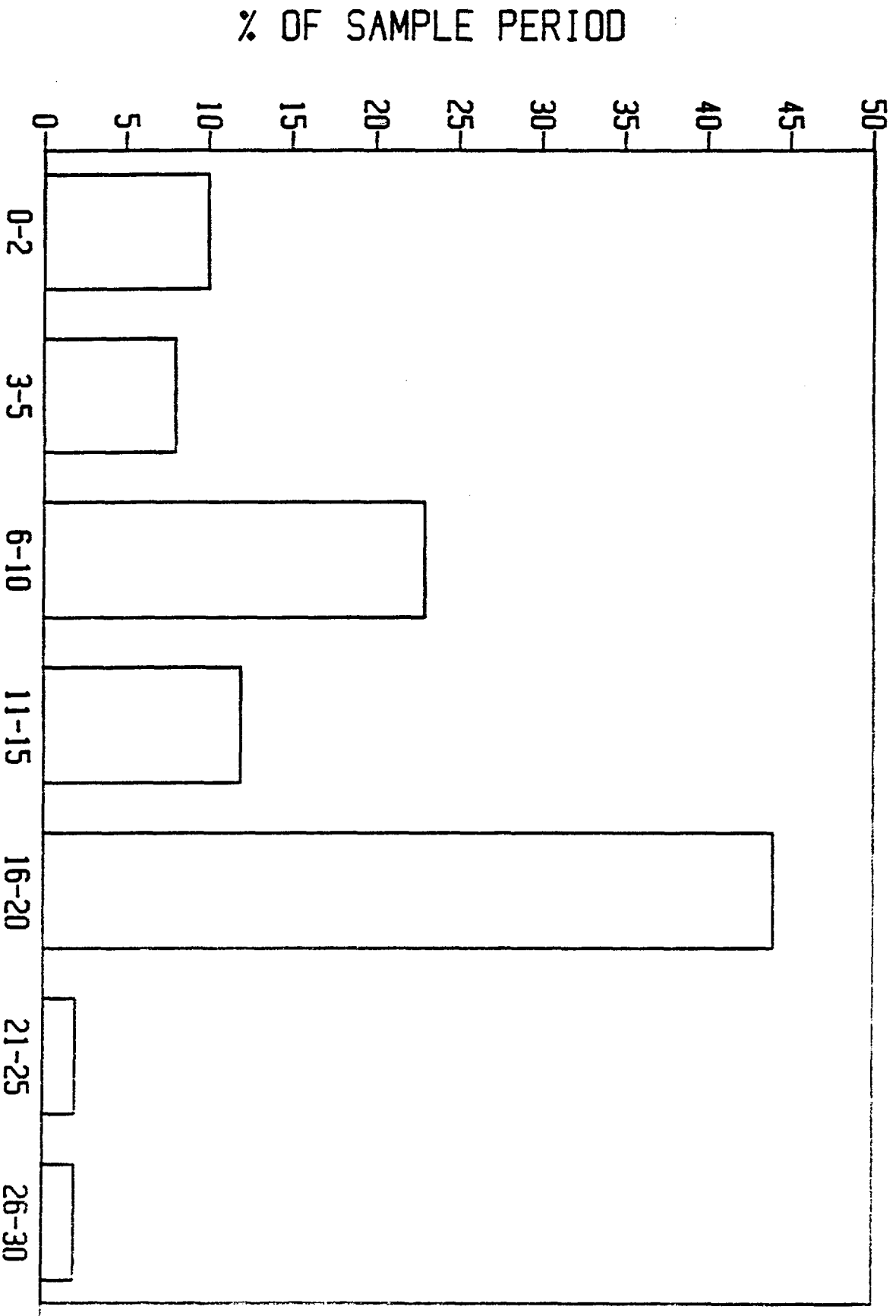


FIG.9 WIND SPEED IN MPH

24

# RICHARDSON FLATS WIND SPEED DAY 2

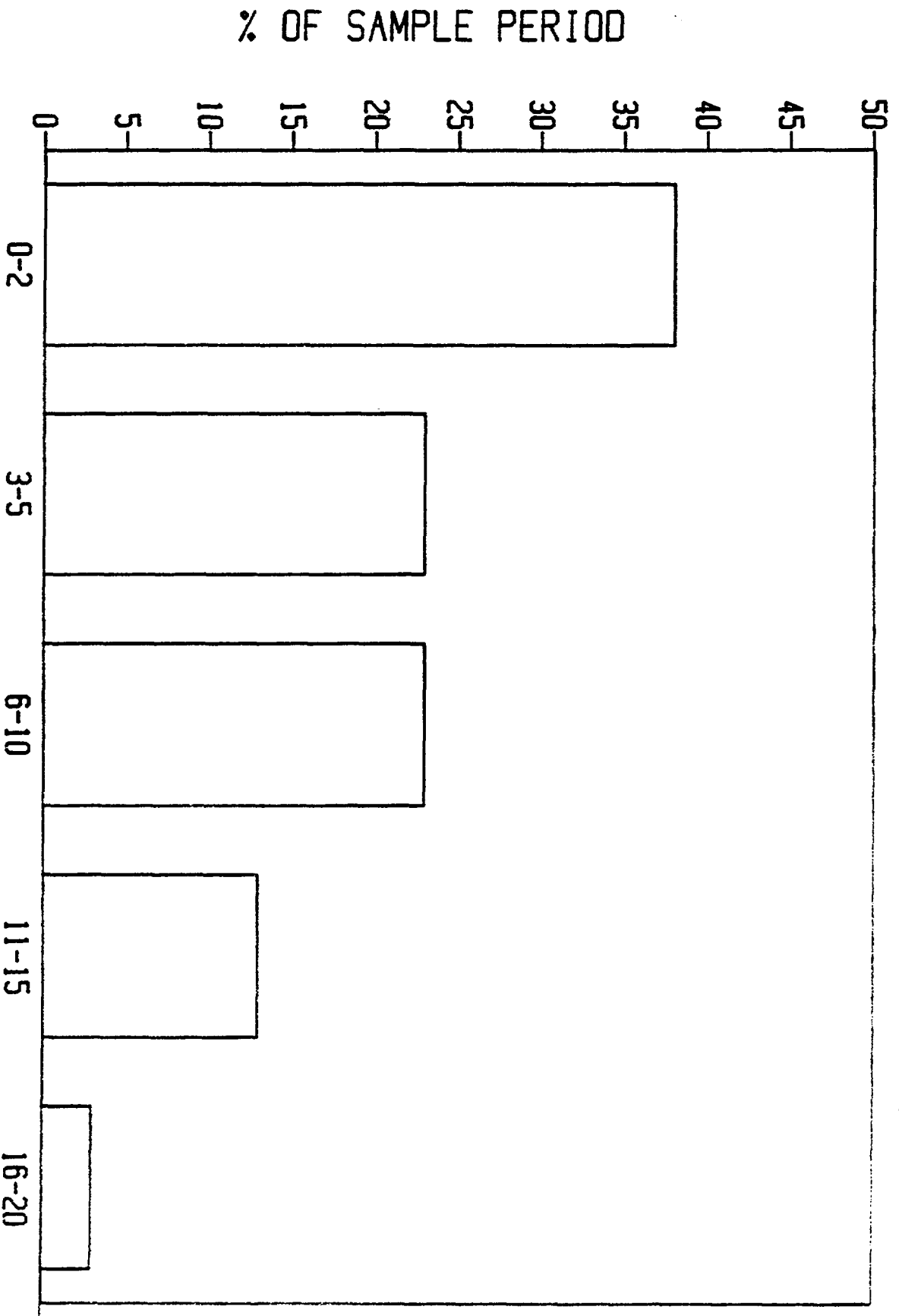


FIG.10 WIND SPEED IN MPH

C. 12/24

# RICHARDSON FLATS WIND SPEED DAY 3

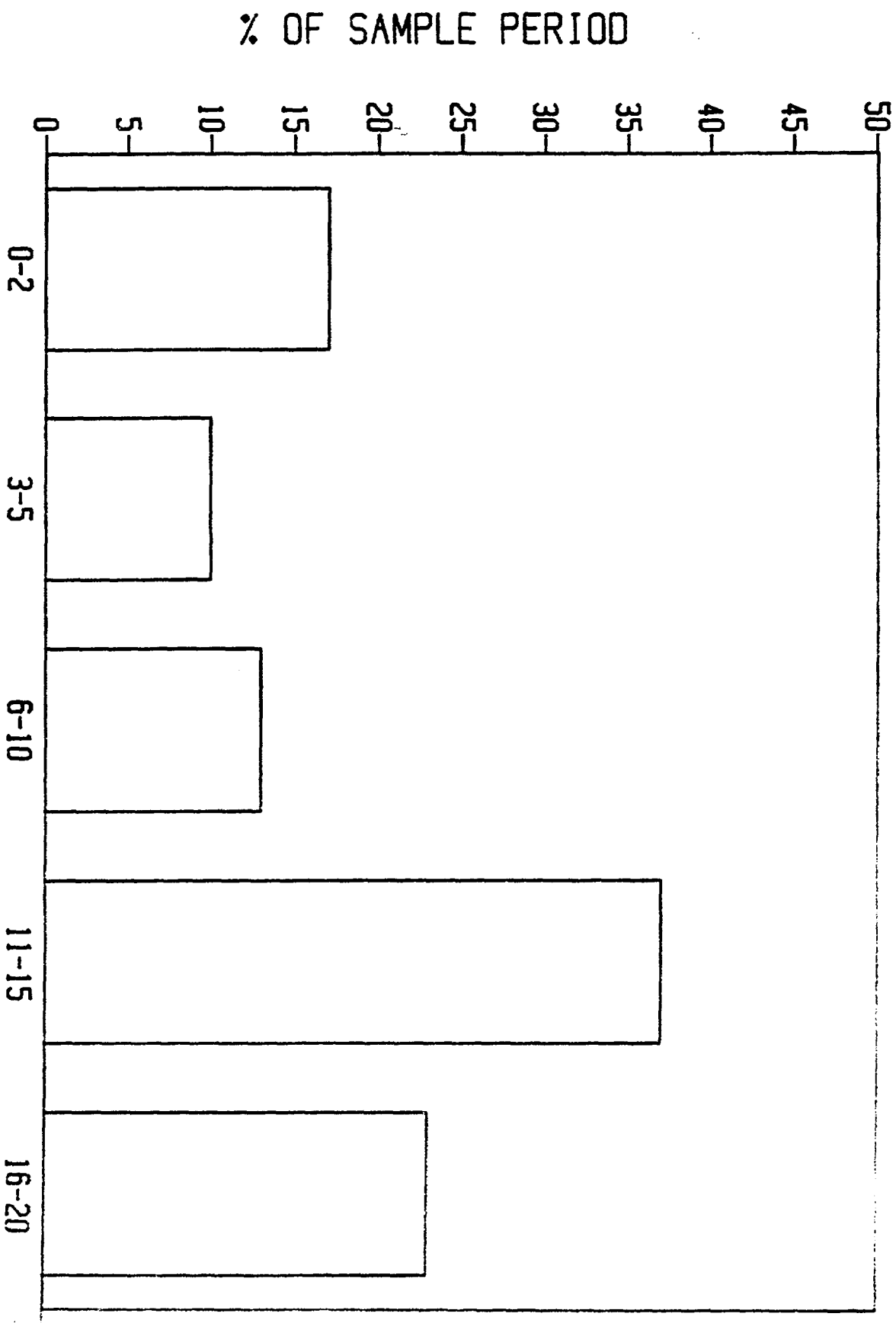


FIG.11 WIND SPEED IN MPH

*CP*

# RICHARDSON FLATS WIND SPEED DAY 4

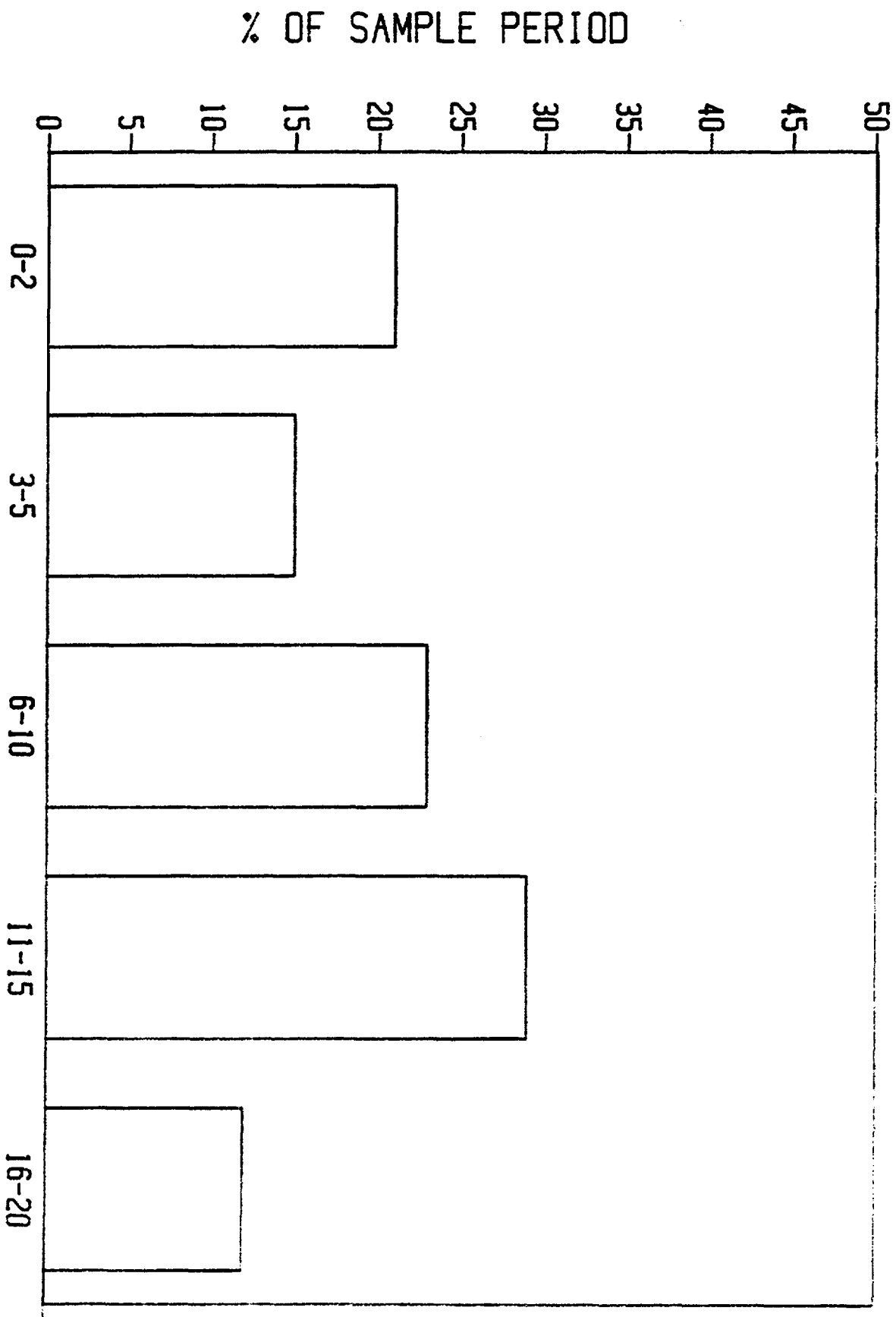


FIG.12 WIND SPEED IN MPH

Fig. 12

# RICHARDSON FLATS WIND SPEED DAY 5

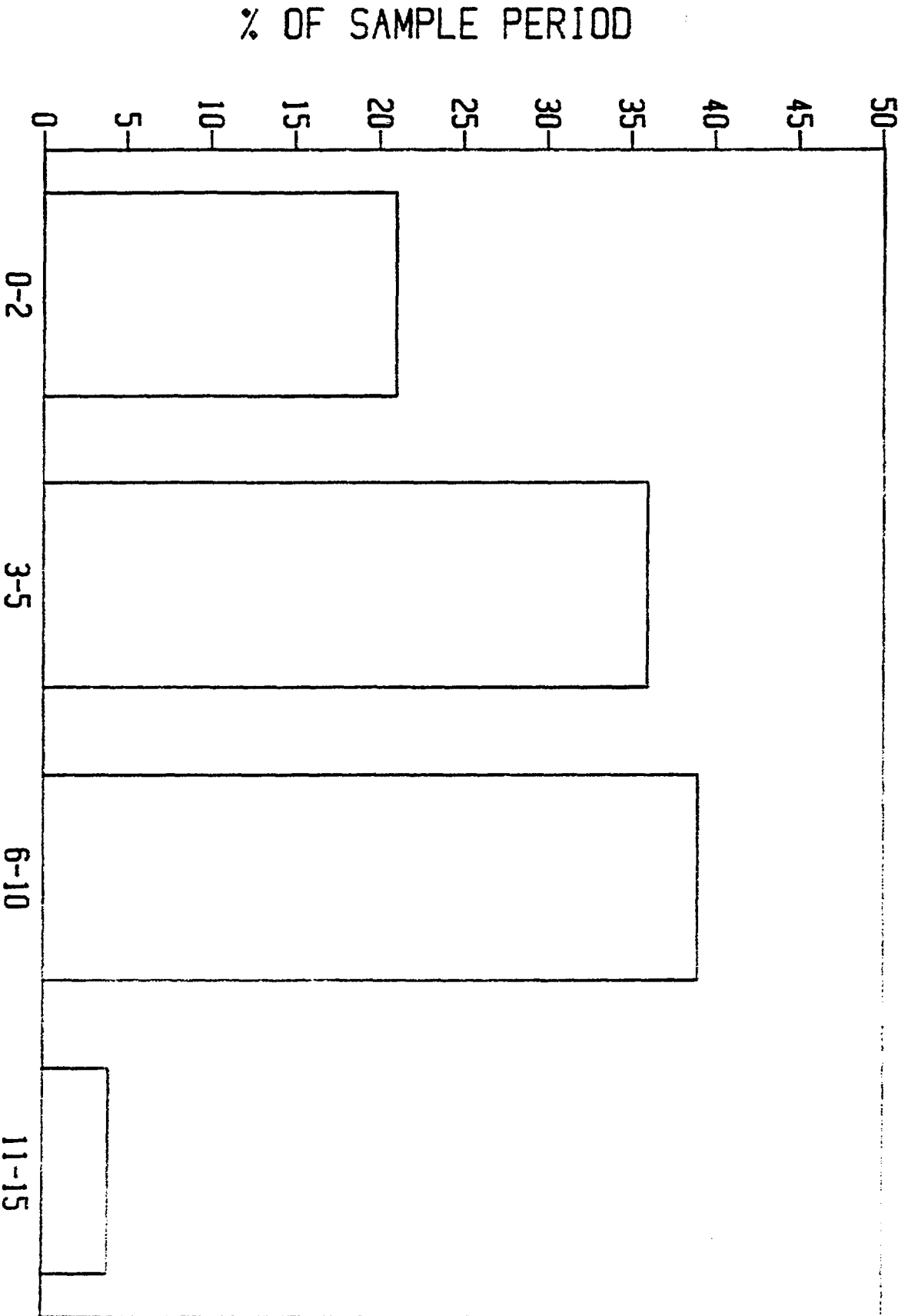


FIG.13 WIND SPEED IN MPH

*Handwritten signature*



Def-2

APPENDIX II  
RAW RESULTS AND QA REPORT

Ref 2

REGION VIII SUMMARY OF DATA QUALITY ASSURANCE REVIEW

Case No. SAS 23564 Project No. \_\_\_\_\_  
Site Richardson Flats  
Contractor Laboratory Hittman Ebasco Assoc.  
Data Reviewer L Roberts Date of Review 9/3/86  
Sample Matrix Cellulose Filters

Sample No. See Laboratory Cover Sheet.

|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

- ( ) Data are acceptable for use  
( ) Data are acceptable for use with qualification noted <sup>below</sup> above  
( ☒ ) Data are preliminary - pending action or verification  
( ) Data are unacceptable

Action required by DPO?

No \_\_\_\_\_ Yes ☒ Following items require action Detection limits

requested by region were not met by the laboratory.  
Lab should resubmit furnace results with RSD values.

Action required by Project Officer (PO)?

No ☒ Yes \_\_\_\_\_

**Following are our findings:**

Cellulose air filters were submitted for analysis of arsenic, cadmium, lead and zinc. This was a SAS request.

The spike recovery for cadmium was 65%. The cadmium results, therefore, have been flagged with an "R". The zinc Laboratory Control Sample recovery was only 60%. The zinc results may be biased low and have been flagged as estimated (J).

Two aspects of the contract were not fulfilled by the laboratory. Detection limits of  $1 \mu\text{g/L}$  were specified by the SAS contract. However, the actual instrument detection limits for As, Cd, Pb and Zn were from  $3.8 - 4.8 \mu\text{g/L}$ . Also, the RSD results for duplicate furanone injections were not reported. The duplicate results appear to agree well, however.

Ref: 2

FORM A

Inorganic Data Completeness Checklist

- ✓ Inorganic analysis data sheets
- ✓ Initial calibration and calibration verification results
- ✓ Continuing calibration verification
- ✓ Instrument Detection limits
- ✓ Duplicate results
- ✓ Spike results
- ✓ ICP interference check sample
- ✓ Blank results
- NR Serial Dilution Results
- ✓ Raw data for calibration standards
- ✓ Raw data for blanks
- ✓ Raw data for samples
- ✓ Raw data for duplicates
- ✓ Raw data for spikes
- ✓ Raw data for furnace AA
- NR Percent solids calculation - soils only
- ✓ Traffic Reports

Reg. 2

FORM B

Initial calibration data were reviewed. Initial calibration data were included in the package and met all contract requirements.

YES ✓ NO       

Comments:

Continuing calibration data were reviewed and these data met all contract requirements.

YES ✓ NO       

Comments:

A blank was run with every twenty samples or less per case.

YES ✓ NO       

Comments:

*two prep blanks were prepared*

How many elements were detected above the required detection limit? 1

*lead at 7 ug/L*

How many elements were detected at greater than one half the amount detected in any sample? 0

Comments:

Ref 2

FORM C

The interference check sample was run twice per eight hour shift. No massive interferences were present.

YES ☒ NO ☐

Comments:

All matrix spike requirements were met.

YES ☒ NO ☐

Comments:

*Corrections made on form were difficult to read and not initialed. a clean filter was spiked, all recoveries were within 65-120%. Cadmium results are flagged due to a 65% spike recovery.*

A duplicate sample was run with every twenty or fewer samples of a similar matrix, or one per case, whichever is more frequent.

YES ☒ NO ☐

The RPD's were tabulated.

YES ☒ NO ☐

Comments:

All inorganic detection limits met the contract requirements.

YES ☐ NO ☒

Comments:

*SAS report specified 1 ug/L detection limits for the four elements. The lab did not reach these limits.*

Ref 2

FORM D

All Laboratory Control Samples met specified contract limits.

YES \_\_\_\_\_

NO ✓

Comments:

*Time 60% Recovery - some results estimated.  
LCS performed as required.*

Serial Dilution requirements were met.

YES \_\_\_\_\_

NO \_\_\_\_\_

*Not Required*

The Furnace Atomic Absorption Analysis Scheme was followed correctly.

YES \_\_\_\_\_

NO ✓

*RSD results are not reported. Duplicate injections appear to  
have good agreement. MSA were performed as required.*

All holding times were met.

YES ✓

NO \_\_\_\_\_

Comments:

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

Ref. 7  
Date 8-14-86

**COVER PAGE A**  
**INORGANIC ANALYSES DATA PACKAGE**

Lab Name HITMAN ERASCO ASSOCIATES INC.

Case No. SAS 2356 H

SOV No. 7/84

Q.C. Report No. 53

Sample Numbers

| <u>EPA No.</u> | <u>Lab ID No.</u> | <u>EPA No.</u> | <u>Lab ID No.</u> |
|----------------|-------------------|----------------|-------------------|
| <u>AM-01-1</u> | <u>★</u>          | <u>AM-01-3</u> | <u>★</u>          |
| <u>AM-02-1</u> | <u>1</u>          | <u>AM-02-3</u> | <u>1</u>          |
| <u>AM-04-1</u> | <u>1</u>          | <u>AM-03-3</u> | <u>1</u>          |
| <u>AM-05-1</u> | <u>1</u>          | <u>AM-04-3</u> | <u>1</u>          |
| <u>AM-01-2</u> | <u>1</u>          | <u>AM-05-3</u> | <u>1</u>          |
| <u>AM-02-2</u> | <u>1</u>          | <u>AM-01-4</u> | <u>1</u>          |
| <u>AM-03-2</u> | <u>1</u>          | <u>AM-02-4</u> | <u>1</u>          |
| <u>AM-04-2</u> | <u>1</u>          | <u>AM-03-4</u> | <u>1</u>          |
| <u>AM-05-2</u> | <u>1</u>          | <u>AM-04-4</u> | <u>1</u>          |

Comments: ★ - same as EPA number  
Zn was analyzed by ICP, Region 8 and  
SMD approved this method change 8-13-86.

ICP Interelement and background corrections applied? Yes X No   .

If yes, corrections applied before X or after    generation of raw data.

Footnotes:

NR - not required by contract at this time

Form I:

- Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (i.e., [10]). Indicate the analytical method used with P (for ICP/Flame AA) or F (for furnace).
- U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., 10U).
- E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
- S - Indicates value determined by Method of Standard Addition.
- R - Indicates spike sample recovery is not within control limits.
- D - Indicates duplicate analysis is not within control limits.
- +
- Indicates the correlation coefficient for method of standard addition is less than 0.995



U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

Ref. 7  
Date 8-14-86

COVER PAGE B  
INORGANIC ANALYSES DATA PACKAGE

Lab Name HITTMAN ERASCO ASSOCIATES INC.

Case No. SAS 23564

SCW No. 7/84

Q.C. Report No. 53

Sample Numbers

| <u>EPA No.</u> | <u>Lab ID No.</u> | <u>EPA No.</u> | <u>Lab ID No.</u> |
|----------------|-------------------|----------------|-------------------|
| <u>AM-05-4</u> | <u>★</u>          | <u>AM-06-4</u> | <u>★</u>          |
| <u>AM-01-5</u> |                   | <u>AM-06-5</u> | <u>L</u>          |
| <u>AM-02-5</u> |                   |                |                   |
| <u>AM-03-5</u> |                   |                |                   |
| <u>AM-04-5</u> |                   |                |                   |
| <u>AM-05-5</u> |                   |                |                   |
| <u>AM-03-1</u> |                   |                |                   |
| <u>AM-06-2</u> |                   |                |                   |
| <u>AM-06-3</u> |                   |                |                   |

Comments: ★ - same as EPA number

ICP Interlement and background corrections applied? Yes X No \_\_\_\_.

If yes, corrections applied before X or after \_\_\_\_ generation of raw data.

Footnotes:

NR - not required by contract at this time

Form I:

Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (i.e., [10]). Indicate the analytical method used with F (for ICP/Flame AA) or F (for furnace).

U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., 100).

E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.

S - Indicates value determined by Method of Standard Addition.

R - Indicates spike sample recovery is not within control limits.

D - Indicates duplicate analysis is not within control limits.

+

- Indicates the correlation coefficient for method of standard addition is less than 0.995

Form 1

U.S. EPA Contract Laboratory Program  
 Sample Management Office  
 P.O. Box 818 - Alexandria, VA 22313  
 703/557-2490 FTS: 8-557-2490

EPA Sample No.  
AM-01-1

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
 Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

ug/filter ug/L or mg/kg dry weight (Circle One)

|                                |                              |
|--------------------------------|------------------------------|
| 1. <u>Aluminum</u>             | 13. <u>Magnesium</u>         |
| 2. <u>Antimony</u>             | 14. <u>Manganese</u>         |
| 3. <u>Arsenic</u> <u>1.0UF</u> | 15. <u>Mercury</u>           |
| 4. <u>Barium</u>               | 16. <u>Nickel</u>            |
| 5. <u>Beryllium</u>            | 17. <u>Potassium</u>         |
| 6. <u>Cadmium</u> <u>50UFR</u> | 18. <u>Selenium</u>          |
| 7. <u>Calcium</u>              | 19. <u>Silver</u>            |
| 8. <u>Chromium</u>             | 20. <u>Sodium</u>            |
| 9. <u>Cobalt</u>               | 21. <u>Thallium</u>          |
| 10. <u>Copper</u>              | 22. <u>Tin</u>               |
| 11. <u>Iron</u>                | 23. <u>Vanadium</u>          |
| 12. <u>Lead</u> <u>3.4F</u>    | 24. <u>Zinc</u> <u>17P S</u> |
| Cyanide _____                  | Percent Solids (Z) _____     |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Lab Manager Gail Solomon/urk

Form I

U.S. EPA Contract Laboratory Program  
 Sample Management Office  
 P.O. Box 818 - Alexandria, VA 22313  
 703/557-2490 FTS: 8-557-2490

EPA Sample No.  
AM-01-2

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
 Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

ug/filtrate

ug/L or ug/kg dry weight (Circle One)

|                                 |                              |
|---------------------------------|------------------------------|
| 1. <u>Aluminum</u>              | 13. <u>Magnesium</u>         |
| 2. <u>Antimony</u>              | 14. <u>Manganese</u>         |
| 3. <u>Arsenic</u> <u>1.0UF</u>  | 15. <u>Mercury</u>           |
| 4. <u>Barium</u>                | 16. <u>Nickel</u>            |
| 5. <u>Beryllium</u>             | 17. <u>Potassium</u>         |
| 6. <u>Cadmium</u> <u>0.54FR</u> | 18. <u>Selenium</u>          |
| 7. <u>Calcium</u>               | 19. <u>Silver</u>            |
| 8. <u>Chromium</u>              | 20. <u>Sodium</u>            |
| 9. <u>Cobalt</u>                | 21. <u>Thallium</u>          |
| 10. <u>Copper</u>               | 22. <u>Tin</u>               |
| 11. <u>Iron</u>                 | 23. <u>Vanadium</u>          |
| 12. <u>Lead</u> <u>8.9F</u>     | 24. <u>Zinc</u> <u>21P 3</u> |
| Cyanide _____                   | Percent Solids (Z) _____     |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Lab Manager Gail Solomon/Dur

Ref. 2

Form 1

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 VTS: 8-557-2490

EPA Sample No.  
AM-01-3

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

ug/liter ug/l or mg/kg dry weight (Circle One)

|                                 |                             |
|---------------------------------|-----------------------------|
| 1. <u>Aluminum</u>              | 13. <u>Magnesium</u>        |
| 2. <u>Antimony</u>              | 14. <u>Manganese</u>        |
| 3. <u>Arsenic</u> <u>1.0UF</u>  | 15. <u>Mercury</u>          |
| 4. <u>Barium</u>                | 16. <u>Nickel</u>           |
| 5. <u>Beryllium</u>             | 17. <u>Potassium</u>        |
| 6. <u>Cadmium</u> <u>0.5UPR</u> | 18. <u>Selenium</u>         |
| 7. <u>Calcium</u>               | 19. <u>Silver</u>           |
| 8. <u>Chromium</u>              | 20. <u>Sodium</u>           |
| 9. <u>Cobalt</u>                | 21. <u>Thallium</u>         |
| 10. <u>Copper</u>               | 22. <u>Tin</u>              |
| 11. <u>Iron</u>                 | 23. <u>Vanadium</u>         |
| 12. <u>Lead</u> <u>12FS</u>     | 24. <u>Zinc</u> <u>23PJ</u> |
| Cyanide _____                   | Percent Solids (X) _____    |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Lab Manager Gail Solomon/pwr

Ref. 2

Form I

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
AM-01-4

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SDW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

ug/filter ug/L or mg/kg dry weight (Circle One)

|                                 |                              |
|---------------------------------|------------------------------|
| 1. <u>Aluminum</u>              | 13. <u>Magnesium</u>         |
| 2. <u>Antimony</u>              | 14. <u>Manganese</u>         |
| 3. <u>Arsenic</u> <u>1.0UF</u>  | 15. <u>Mercury</u>           |
| 4. <u>Barium</u>                | 16. <u>Nickel</u>            |
| 5. <u>Beryllium</u>             | 17. <u>Potassium</u>         |
| 6. <u>Cadmium</u> <u>0.5UFR</u> | 18. <u>Selenium</u>          |
| 7. <u>Calcium</u>               | 19. <u>Silver</u>            |
| 8. <u>Chromium</u>              | 20. <u>Sodium</u>            |
| 9. <u>Cobalt</u>                | 21. <u>Thallium</u>          |
| 10. <u>Copper</u>               | 22. <u>Tin</u>               |
| 11. <u>Iron</u>                 | 23. <u>Vanadium</u>          |
| 12. <u>Lead</u> <u>29FS</u>     | 24. <u>Zinc</u> <u>43P J</u> |
| Cyanide _____                   | Percent Solids (Z) _____     |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Lab Manager Geil Solomon/buk

Ref. 2

Form I

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: B-557-2490

EPA Sample No.  
AM-01-5

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SDV NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

ug/filter ng/L or ng/kg dry weight (Circle One)

|                                 |                             |
|---------------------------------|-----------------------------|
| 1. <u>Aluminum</u>              | 13. <u>Magnesium</u>        |
| 2. <u>Antimony</u>              | 14. <u>Manganese</u>        |
| 3. <u>Arsenic</u> <u>1.0UF</u>  | 15. <u>Mercury</u>          |
| 4. <u>Barium</u>                | 16. <u>Nickel</u>           |
| 5. <u>Beryllium</u>             | 17. <u>Potassium</u>        |
| 6. <u>Cadmium</u> <u>0.5UFR</u> | 18. <u>Selenium</u>         |
| 7. <u>Calcium</u>               | 19. <u>Silver</u>           |
| 8. <u>Chromium</u>              | 20. <u>Sodium</u>           |
| 9. <u>Cobalt</u>                | 21. <u>Thallium</u>         |
| 10. <u>Copper</u>               | 22. <u>Tin</u>              |
| 11. <u>Iron</u>                 | 23. <u>Vanadium</u>         |
| 12. <u>Lead</u> <u>8.0FS</u>    | 24. <u>Zinc</u> <u>22PJ</u> |
| Cyanide _____                   | Percent Solids (%) _____    |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Lab Manager Geil Solomon

*Ref 2*

Form I

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
AM-02-1

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

ug/filter

ug/L or mg/kg dry weight (Circle One)

|                                 |                             |
|---------------------------------|-----------------------------|
| 1. <u>Aluminum</u>              | 13. <u>Magnesium</u>        |
| 2. <u>Antimony</u>              | 14. <u>Manganese</u>        |
| 3. <u>Arsenic</u> <u>1.0UF</u>  | 15. <u>Mercury</u>          |
| 4. <u>Barium</u>                | 16. <u>Nickel</u>           |
| 5. <u>Beryllium</u>             | 17. <u>Potassium</u>        |
| 6. <u>Cadmium</u> <u>0.5UFS</u> | 18. <u>Selenium</u>         |
| 7. <u>Calcium</u>               | 19. <u>Silver</u>           |
| 8. <u>Chromium</u>              | 20. <u>Sodium</u>           |
| 9. <u>Cobalt</u>                | 21. <u>Thallium</u>         |
| 10. <u>Copper</u>               | 22. <u>Tin</u>              |
| 11. <u>Iron</u>                 | 23. <u>Vanadium</u>         |
| 12. <u>Lead</u> <u>8.3FS</u>    | 24. <u>Zinc</u> <u>15P3</u> |
| Cyanide _____                   | Percent Solids (Z) _____    |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Lab Manager Gail Solomon

Ref-2

Form 1

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
AM-02-2

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

ug/filter ug/L or mg/kg dry weight (Circle One)

|                                 |                             |
|---------------------------------|-----------------------------|
| 1. <u>Aluminum</u>              | 13. <u>Magnesium</u>        |
| 2. <u>Antimony</u>              | 14. <u>Manganese</u>        |
| 3. <u>Arsenic</u> <u>6.8FS</u>  | 15. <u>Mercury</u>          |
| 4. <u>Barium</u>                | 16. <u>Nickel</u>           |
| 5. <u>Beryllium</u>             | 17. <u>Potassium</u>        |
| 6. <u>Cadmium</u> <u>0.5UFR</u> | 18. <u>Selenium</u>         |
| 7. <u>Calcium</u>               | 19. <u>Silver</u>           |
| 8. <u>Chromium</u>              | 20. <u>Sodium</u>           |
| 9. <u>Cobalt</u>                | 21. <u>Thallium</u>         |
| 10. <u>Copper</u>               | 22. <u>Tin</u>              |
| 11. <u>Iron</u>                 | 23. <u>Vanadium</u>         |
| 12. <u>Lead</u> <u>147FS</u>    | 24. <u>Zinc</u> <u>88PJ</u> |
| Cyanide _____                   | Percent Solids (X) _____    |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Lab Manager Gail Solomon/pur



Page 2

Form 1

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 VTS: 8-557-2490

EPA Sample No.  
AM-02-3

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SDW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

ug/liter

ug/L or mg/kg dry weight (Circle One)

|                                |                               |
|--------------------------------|-------------------------------|
| 1. <u>Aluminum</u>             | 13. <u>Magnesium</u>          |
| 2. <u>Antimony</u>             | 14. <u>Manganese</u>          |
| 3. <u>Arsenic</u> <u>13FS</u>  | 15. <u>Mercury</u>            |
| 4. <u>Barium</u>               | 16. <u>Nickel</u>             |
| 5. <u>Beryllium</u>            | 17. <u>Potassium</u>          |
| 6. <u>Cadmium</u> <u>0.8FR</u> | 18. <u>Selenium</u>           |
| 7. <u>Calcium</u>              | 19. <u>Silver</u>             |
| 8. <u>Chromium</u>             | 20. <u>Sodium</u>             |
| 9. <u>Cobalt</u>               | 21. <u>Thallium</u>           |
| 10. <u>Copper</u>              | 22. <u>Tin</u>                |
| 11. <u>Iron</u>                | 23. <u>Vanadium</u>           |
| 12. <u>Lead</u> <u>264FS</u>   | 24. <u>Zinc</u> <u>16AP I</u> |
| Cyanide _____                  | Percent Solids (X) _____      |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Lab Manager Gail Solomon/rmk

Ref-2

Form 1

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
AM-02-4

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

ug/filter or mg/kg dry weight (Circle One)

|                                  |                               |
|----------------------------------|-------------------------------|
| 1. <u>Aluminum</u>               | 13. <u>Magnesium</u>          |
| 2. <u>Antimony</u>               | 14. <u>Manganese</u>          |
| 3. <u>Arsenic</u> <u>6.6 FS</u>  | 15. <u>Mercury</u>            |
| 4. <u>Barium</u>                 | 16. <u>Nickel</u>             |
| 5. <u>Beryllium</u>              | 17. <u>Potassium</u>          |
| 6. <u>Cadmium</u> <u>0.54 FR</u> | 18. <u>Selenium</u>           |
| 7. <u>Calcium</u>                | 19. <u>Silver</u>             |
| 8. <u>Chromium</u>               | 20. <u>Sodium</u>             |
| 9. <u>Cobalt</u>                 | 21. <u>Thallium</u>           |
| 10. <u>Copper</u>                | 22. <u>Tin</u>                |
| 11. <u>Iron</u>                  | 23. <u>Vanadium</u>           |
| 12. <u>Lead</u> <u>131 F</u>     | 24. <u>Zinc</u> <u>98 P 3</u> |
| Cyanide _____                    | Percent Solids (X) _____      |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
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\_\_\_\_\_

Lab Manager Gail Solomon/bmk

Ref. 2

Form 1

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
**AM-02-5**

Date **8-14-86**

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

ug/filter ug/L or ug/kg dry weight (Circle One)

|                                  |                               |
|----------------------------------|-------------------------------|
| 1. <u>ALUMINUM</u>               | 13. <u>Magnesium</u>          |
| 2. <u>Antimony</u>               | 14. <u>Manganese</u>          |
| 3. <u>Arsenic</u> <u>1.8 FS</u>  | 15. <u>Mercury</u>            |
| 4. <u>Barium</u>                 | 16. <u>Nickel</u>             |
| 5. <u>Beryllium</u>              | 17. <u>Potassium</u>          |
| 6. <u>Cadmium</u> <u>0.5 UFR</u> | 18. <u>Selenium</u>           |
| 7. <u>Calcium</u>                | 19. <u>Silver</u>             |
| 8. <u>Chromium</u>               | 20. <u>Sodium</u>             |
| 9. <u>Cobalt</u>                 | 21. <u>Thallium</u>           |
| 10. <u>Copper</u>                | 22. <u>Tin</u>                |
| 11. <u>Iron</u>                  | 23. <u>Vanadium</u>           |
| 12. <u>Lead</u> <u>48 FS</u>     | 24. <u>Zinc</u> <u>51 P 3</u> |
| Cyanide _____                    | Percent Solids (X) _____      |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
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\_\_\_\_\_

Lab Manager Gail Solomon/buk

Ref. 2

Form 1

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
**AM-03-1**

Date **8-14-86**

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SDW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

ug/filter ug/l or mg/kg dry weight (Circle One)

|  |                               |
|--|-------------------------------|
| 1. <u>Aluminum</u>                         | 13. <u>Magnesium</u>          |
| 2. <u>Antimony</u>                         | 14. <u>Manganese</u>          |
| 3. <u>Arsenic</u> <u>1.0UF</u>             | 15. <u>Mercury</u>            |
| 4. <u>Barium</u>                           | 16. <u>Nickel</u>             |
| 5. <u>Beryllium</u>                        | 17. <u>Potassium</u>          |
| 6. <u>Cadmium</u> <u>0.54FR</u>            | 18. <u>Selenium</u>           |
| 7. <u>Calcium</u>                          | 19. <u>Silver</u>             |
| 8. <u>Chromium</u>                         | 20. <u>Sodium</u>             |
| 9. <u>Cobalt</u>                           | 21. <u>Thallium</u>           |
| 10. <u>Copper</u>                          | 22. <u>Tin</u>                |
| 11. <u>Iron</u>                            | 23. <u>Vanadium</u>           |
| 12. <u>Lead</u> <u>0.54FR<sup>KH</sup></u> | 24. <u>Zinc</u> <u>0.4UPJ</u> |
| Cyanide _____                              | Percent Solids (I) _____      |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
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\_\_\_\_\_

Lab Manager Gail Solomon/DWIC

Ref 2

Form 1

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
**AM-03-2**

Date **8-14-86**

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

mg/filter ug/L or mg/kg dry weight (Circle One)

|                                  |                               |
|----------------------------------|-------------------------------|
| 1. <u>Aluminum</u>               | 13. <u>Magnesium</u>          |
| 2. <u>Antimony</u>               | 14. <u>Manganese</u>          |
| 3. <u>Arsenic</u> <u>1.4 FS</u>  | 15. <u>Mercury</u>            |
| 4. <u>Barium</u>                 | 16. <u>Nickel</u>             |
| 5. <u>Beryllium</u>              | 17. <u>Potassium</u>          |
| 6. <u>Cadmium</u> <u>0.5 UFR</u> | 18. <u>Selenium</u>           |
| 7. <u>Calcium</u>                | 19. <u>Silver</u>             |
| 8. <u>Chromium</u>               | 20. <u>Sodium</u>             |
| 9. <u>Cobalt</u>                 | 21. <u>Thallium</u>           |
| 10. <u>Copper</u>                | 22. <u>Tin</u>                |
| 11. <u>Iron</u>                  | 23. <u>Vanadium</u>           |
| 12. <u>Lead</u> <u>26 F</u>      | 24. <u>Zinc</u> <u>34 P S</u> |
| Cyanide _____                    | Percent Solids (X) _____      |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
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Lab Manager Gail Solomon/DWK

Ref-2

Form I

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
AM-03-3

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SDW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

ug/filter

ug/L or mg/kg dry weight (Circle One)

|                                 |                              |
|---------------------------------|------------------------------|
| 1. <u>Aluminum</u>              | 13. <u>Magnesium</u>         |
| 2. <u>Antimony</u>              | 14. <u>Manganese</u>         |
| 3. <u>Arsenic</u> <u>1.0UF</u>  | 15. <u>Mercury</u>           |
| 4. <u>Barium</u>                | 16. <u>Nickel</u>            |
| 5. <u>Beryllium</u>             | 17. <u>Potassium</u>         |
| 6. <u>Cadmium</u> <u>0.5UFR</u> | 18. <u>Selenium</u>          |
| 7. <u>Calcium</u>               | 19. <u>Silver</u>            |
| 8. <u>Chromium</u>              | 20. <u>Sodium</u>            |
| 9. <u>Cobalt</u>                | 21. <u>Thallium</u>          |
| 10. <u>Copper</u>               | 22. <u>Tin</u>               |
| 11. <u>Iron</u>                 | 23. <u>Vanadium</u>          |
| 12. <u>Lead</u> <u>25FS</u>     | 24. <u>Zinc</u> <u>28P J</u> |
| Cyanide _____                   | Percent Solids (X) _____     |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
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Lab Manager Gail Solomon/purc

Ref 2

Form 1

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
AM-03-4

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

ug/liter ug/l or mg/kg dry weight (Circle One)

|                                  |                               |
|----------------------------------|-------------------------------|
| 1. <u>Aluminum</u>               | 13. <u>Magnesium</u>          |
| 2. <u>Antimony</u>               | 14. <u>Manganese</u>          |
| 3. <u>Arsenic</u> <u>1.2 FS</u>  | 15. <u>Mercury</u>            |
| 4. <u>Barium</u>                 | 16. <u>Nickel</u>             |
| 5. <u>Beryllium</u>              | 17. <u>Potassium</u>          |
| 6. <u>Cadmium</u> <u>0.5 UFR</u> | 18. <u>Selenium</u>           |
| 7. <u>Calcium</u>                | 19. <u>Silver</u>             |
| 8. <u>Chromium</u>               | 20. <u>Sodium</u>             |
| 9. <u>Cobalt</u>                 | 21. <u>Thallium</u>           |
| 10. <u>Copper</u>                | 22. <u>Tin</u>                |
| 11. <u>Iron</u>                  | 23. <u>Vanadium</u>           |
| 12. <u>Lead</u> <u>40 FS</u>     | 24. <u>Zinc</u> <u>36 P 5</u> |
| Cyanide _____                    | Percent Solids (X) _____      |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
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Lab Manager Gail Solomon/DWIC

Ref 2

Form 1

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
**AM-03-5**

Date **8-14-86**

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SOLV NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

ug/filter

ug/l or mg/kg dry weight (Circle One)

|                                 |                             |
|---------------------------------|-----------------------------|
| 1. <u>Aluminum</u>              | 13. <u>Magnesium</u>        |
| 2. <u>Antimony</u>              | 14. <u>Manganese</u>        |
| 3. <u>Arsenic</u> <u>1.0UF</u>  | 15. <u>Mercury</u>          |
| 4. <u>Barium</u>                | 16. <u>Nickel</u>           |
| 5. <u>Beryllium</u>             | 17. <u>Potassium</u>        |
| 6. <u>Cadmium</u> <u>0.5UFR</u> | 18. <u>Selenium</u>         |
| 7. <u>Calcium</u>               | 19. <u>Silver</u>           |
| 8. <u>Chromium</u>              | 20. <u>Sodium</u>           |
| 9. <u>Cobalt</u>                | 21. <u>Thallium</u>         |
| 10. <u>Copper</u>               | 22. <u>Tin</u>              |
| 11. <u>Iron</u>                 | 23. <u>Vanadium</u>         |
| 12. <u>Lead</u> <u>30FS</u>     | 24. <u>Zinc</u> <u>23P3</u> |
| Cyanide _____                   | Percent Solids (X) _____    |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
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Lab Manager Orin Solomon/fmk



U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 9-557-2490

Form 1

Date 8-14-86

EPA Sample No. AM-04-1

INORGANIC ANALYSIS DATA SHEET

CASE NO. SAS 2356 H

LAB NAME Hittman Ebasco Assoc., Inc.

SOV NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration:

Low ☒

Medium

Matrix: Water

Soil

Sediment

Other ☒

ug/L or mg/kg dry weight (Circle One)

|              |         |                    |        |
|--------------|---------|--------------------|--------|
| 1. Aluminum  |         | 13. Manganese      |        |
| 2. Antimony  | 54F     | 14. Manganese      |        |
| 3. Arsenic   |         | 15. Mercury        |        |
| 4. Barium    |         | 16. Nickel         |        |
| 5. Beryllium |         | 17. Potassium      |        |
| 6. Cadmium   | 4.8 FRS | 18. Selenium       |        |
| 7. Calcium   |         | 19. Silver         |        |
| 8. Chlorine  |         | 20. Sodium         |        |
| 9. Cobalt    |         | 21. Thallium       |        |
| 10. Copper   |         | 22. Tin            |        |
| 11. Iron     |         | 23. Vanadium       |        |
| 12. Lead     | 959F    | 24. Zinc           | 672P 5 |
| Cyanide      |         | Percent Solids (%) |        |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager Carol Solomon/BWC

Ref-2

Form I

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
AM-04-2

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

mg/liter ug/L or mg/kg dry weight (Circle One)

- |                                  |                               |
|----------------------------------|-------------------------------|
| 1. <u>Aluminum</u>               | 13. <u>Magnesium</u>          |
| 2. <u>Antimony</u>               | 14. <u>Manganese</u>          |
| 3. <u>Arsenic</u> <u>1.5 FS</u>  | 15. <u>Mercury</u>            |
| 4. <u>Barium</u>                 | 16. <u>Nickel</u>             |
| 5. <u>Beryllium</u>              | 17. <u>Potassium</u>          |
| 6. <u>Cadmium</u> <u>.50 UFR</u> | 18. <u>Selenium</u>           |
| 7. <u>Calcium</u>                | 19. <u>Silver</u>             |
| 8. <u>Chromium</u>               | 20. <u>Sodium</u>             |
| 9. <u>Cobalt</u>                 | 21. <u>Thallium</u>           |
| 10. <u>Copper</u>                | 22. <u>Tin</u>                |
| 11. <u>Iron</u>                  | 23. <u>Vanadium</u>           |
| 12. <u>Lead</u> <u>30 F</u>      | 24. <u>Zinc</u> <u>39 P S</u> |
| Cyanide _____                    | Percent Solids (X) _____      |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
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Lab Manager Gail Solomon  
/mk

Ref-2

Form I

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
AM-04-3

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

mg/g ug/L or mg/kg dry weight (Circle One)

|                                  |                              |
|----------------------------------|------------------------------|
| 1. <u>Aluminum</u>               | 13. <u>Magnesium</u>         |
| 2. <u>Antimony</u>               | 14. <u>Manganese</u>         |
| 3. <u>Arsenic</u> <u>1.5 FS</u>  | 15. <u>Mercury</u>           |
| 4. <u>Barium</u>                 | 16. <u>Nickel</u>            |
| 5. <u>Beryllium</u>              | 17. <u>Potassium</u>         |
| 6. <u>Cadmium</u> <u>.50 UFR</u> | 18. <u>Selenium</u>          |
| 7. <u>Calcium</u>                | 19. <u>Silver</u>            |
| 8. <u>Chromium</u>               | 20. <u>Sodium</u>            |
| 9. <u>Cobalt</u>                 | 21. <u>Thallium</u>          |
| 10. <u>Copper</u>                | 22. <u>Tin</u>               |
| 11. <u>Iron</u>                  | 23. <u>Vanadium</u>          |
| 12. <u>Lead</u> <u>36 FS</u>     | 24. <u>Zinc</u> <u>43 PJ</u> |
| Cyanide _____                    | Percent Solids (X) _____     |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
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\_\_\_\_\_

Lab Manager Gail Solomon  
/mk

Ref. 2

Form I

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
AM-04-4

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

mg/liter

ug/l or mg/kg dry weight (Circle One)

- |                                  |                              |
|----------------------------------|------------------------------|
| 1. <u>Aluminum</u>               | 13. <u>Magnesium</u>         |
| 2. <u>Antimony</u>               | 14. <u>Manganese</u>         |
| 3. <u>Arsenic</u> <u>1.0 UF</u>  | 15. <u>Mercury</u>           |
| 4. <u>Barium</u>                 | 16. <u>Nickel</u>            |
| 5. <u>Beryllium</u>              | 17. <u>Potassium</u>         |
| 6. <u>Cadmium</u> <u>.50 UFR</u> | 18. <u>Selenium</u>          |
| 7. <u>Calcium</u>                | 19. <u>Silver</u>            |
| 8. <u>Chromium</u>               | 20. <u>Sodium</u>            |
| 9. <u>Cobalt</u>                 | 21. <u>Thallium</u>          |
| 10. <u>Copper</u>                | 22. <u>Tin</u>               |
| 11. <u>Iron</u>                  | 23. <u>Vanadium</u>          |
| 12. <u>Lead</u> <u>64 FS</u>     | 24. <u>Zinc</u> <u>35 PJ</u> |
| Cyanide _____                    | Percent Solids (X) _____     |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
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Lab Manager Gail Solomon  
bmk

Ref 2

Form I

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 VTS: 8-557-2490

EPA Sample No.  
AM-04-5

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

Na/Filter

ug/L or mg/kg dry weight (Circle One)

|                                  |                              |
|----------------------------------|------------------------------|
| 1. <u>Aluminum</u>               | 13. <u>Magnesium</u>         |
| 2. <u>Antimony</u>               | 14. <u>Manganese</u>         |
| 3. <u>Arsenic</u> <u>1.5 FS</u>  | 15. <u>Mercury</u>           |
| 4. <u>Barium</u>                 | 16. <u>Nickel</u>            |
| 5. <u>Beryllium</u>              | 17. <u>Potassium</u>         |
| 6. <u>Cadmium</u> <u>.50 UFR</u> | 18. <u>Selenium</u>          |
| 7. <u>Calcium</u>                | 19. <u>Silver</u>            |
| 8. <u>Chromium</u>               | 20. <u>Sodium</u>            |
| 9. <u>Cobalt</u>                 | 21. <u>Thallium</u>          |
| 10. <u>Copper</u>                | 22. <u>Tin</u>               |
| 11. <u>Iron</u>                  | 23. <u>Vanadium</u>          |
| 12. <u>Lead</u> <u>27 F</u>      | 24. <u>Zinc</u> <u>27 PS</u> |
| Cyanide _____                    | Percent Solids (X) _____     |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
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Lab Manager Gail Solomon  
DWF

Ref-2

Form I

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
AM-05-1

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

uo/giler

ug/L or mg/kg dry weight (Circle One)

- |  |                                      |
|--|--------------------------------------|
| 1. <u>Aluminum</u>                           | 13. <u>Magnesium</u>                 |
| 2. <u>Antimony</u>                           | 14. <u>Manganese</u>                 |
| 3. <u>Arsenic</u> <u>175* FS</u>             | 15. <u>Mercury</u>                   |
| 4. <u>Barium</u>                             | 16. <u>Nickel</u>                    |
| 5. <u>Beryllium</u>                          | 17. <u>Potassium</u>                 |
| 6. <u>Cadmium</u> <u>5.2</u> <u>0.50 FRS</u> | 18. <u>Selenium</u>                  |
| 7. <u>Calcium</u>                            | 19. <u>Silver</u>                    |
| 8. <u>Chromium</u>                           | 20. <u>Sodium</u>                    |
| 9. <u>Cobalt</u>                             | 21. <u>Thallium</u>                  |
| 10. <u>Copper</u>                            | 22. <u>Tin</u>                       |
| 11. <u>Iron</u>                              | 23. <u>Vanadium</u>                  |
| 12. <u>Lead</u> <u>348</u> <u>27 F</u>       | 24. <u>Zinc</u> <u>527</u> <u>PJ</u> |

Cyanide \_\_\_\_\_ Percent Solids (Z) \_\_\_\_\_

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Lab Manager Gail Solomon  
/DWK

Form 1

U.S. EPA Contract Laboratory Program  
 Sample Management Office  
 P.O. Box 818 - Alexandria, VA 22313  
 703/557-2490 FTS: 8-557-2490

EPA Sample No.  
AM-05-2

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
 Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

no filter

ug/L or mg/kg dry weight (Circle One)

- |                                  |                               |
|----------------------------------|-------------------------------|
| 1. <u>Aluminum</u>               | 13. <u>Magnesium</u>          |
| 2. <u>Antimony</u>               | 14. <u>Manganese</u>          |
| 3. <u>Arsenic</u> <u>1.0 UF</u>  | 15. <u>Mercury</u>            |
| 4. <u>Barium</u>                 | 16. <u>Nickel</u>             |
| 5. <u>Beryllium</u>              | 17. <u>Potassium</u>          |
| 6. <u>Cadmium</u> <u>.50 UFR</u> | 18. <u>Selenium</u>           |
| 7. <u>Calcium</u>                | 19. <u>Silver</u>             |
| 8. <u>Chromium</u>               | 20. <u>Sodium</u>             |
| 9. <u>Cobalt</u>                 | 21. <u>Thallium</u>           |
| 10. <u>Copper</u>                | 22. <u>Tin</u>                |
| 11. <u>Iron</u>                  | 23. <u>Vanadium</u>           |
| 12. <u>Lead</u> <u>14 FS</u>     | 24. <u>Zinc</u> <u>17 P J</u> |
| Cyanide _____                    | Percent Solids (X) _____      |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Lab Manager Gail Solomon/muc

Ref-2

Form I

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
AM-05-3

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

mg/liter mg/l or mg/kg dry weight (Circle One)

|                                   |                               |
|-----------------------------------|-------------------------------|
| 1. <u>Aluminum</u>                | 13. <u>Magnesium</u>          |
| 2. <u>Antimony</u>                | 14. <u>Manganese</u>          |
| 3. <u>Arsenic</u> <u>1.4 F</u>    | 15. <u>Mercury</u>            |
| 4. <u>Barium</u>                  | 16. <u>Nickel</u>             |
| 5. <u>Beryllium</u>               | 17. <u>Potassium</u>          |
| 6. <u>Cadmium</u> <u>1.50 UFR</u> | 18. <u>Selenium</u>           |
| 7. <u>Calcium</u>                 | 19. <u>Silver</u>             |
| 8. <u>Chromium</u>                | 20. <u>Sodium</u>             |
| 9. <u>Cobalt</u>                  | 21. <u>Thallium</u>           |
| 10. <u>Copper</u>                 | 22. <u>Tin</u>                |
| 11. <u>Iron</u>                   | 23. <u>Vanadium</u>           |
| 12. <u>Lead</u> <u>30 F</u>       | 24. <u>Zinc</u> <u>55 P J</u> |
| Cyanide _____                     | Percent Solids, (Z) _____     |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Lab Manager Gail Solomon/DWK



Ref 2

Form 1

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
AM-05-4

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

mg/L / filter

ug/L or mg/kg dry weight (Circle One)

- |                                  |                              |
|----------------------------------|------------------------------|
| 1. <u>Aluminum</u>               | 13. <u>Magnesium</u>         |
| 2. <u>Antimony</u>               | 14. <u>Manganese</u>         |
| 3. <u>Arsenic</u> <u>1.1 F</u>   | 15. <u>Mercury</u>           |
| 4. <u>Barium</u>                 | 16. <u>Nickel</u>            |
| 5. <u>Beryllium</u>              | 17. <u>Potassium</u>         |
| 6. <u>Cadmium</u> <u>.50 UFR</u> | 18. <u>Selenium</u>          |
| 7. <u>Calcium</u>                | 19. <u>Silver</u>            |
| 8. <u>Chromium</u>               | 20. <u>Sodium</u>            |
| 9. <u>Cobalt</u>                 | 21. <u>Thallium</u>          |
| 10. <u>Copper</u>                | 22. <u>Tin</u>               |
| 11. <u>Iron</u>                  | 23. <u>Vanadium</u>          |
| 12. <u>Lead</u> <u>35 FS</u>     | 24. <u>Zinc</u> <u>43 PJ</u> |

Cyanide \_\_\_\_\_ Percent Solids (X) \_\_\_\_\_

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Lab Manager Gail Solomon

Ref-2

Form I

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 0-557-2490

EPA Sample No.  
**AM-05-5**

Date **8-14-86**

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

NO Filter ug/l or mg/kg dry weight (Circle One)

|                                  |                              |
|----------------------------------|------------------------------|
| 1. <u>Aluminum</u>               | 13. <u>Magnesium</u>         |
| 2. <u>Antimony</u>               | 14. <u>Manganese</u>         |
| 3. <u>Arsenic</u> <u>1.0 UF</u>  | 15. <u>Mercury</u>           |
| 4. <u>Barium</u>                 | 16. <u>Nickel</u>            |
| 5. <u>Beryllium</u>              | 17. <u>Potassium</u>         |
| 6. <u>Cadmium</u> <u>.50 UFR</u> | 18. <u>Selenium</u>          |
| 7. <u>Calcium</u>                | 19. <u>Silver</u>            |
| 8. <u>Chromium</u>               | 20. <u>Sodium</u>            |
| 9. <u>Cobalt</u>                 | 21. <u>Thallium</u>          |
| 10. <u>Copper</u>                | 22. <u>Tin</u>               |
| 11. <u>Iron</u>                  | 23. <u>Vanadium</u>          |
| 12. <u>Lead</u> <u>16 F</u>      | 24. <u>Zinc</u> <u>27 PS</u> |
| Cyanide _____                    | Percent Solids (X) _____     |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Lab Manager Gail Solomon/DWK

Ref 2

Form 1

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
AM-06-2

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

ug/giller

ug/l or mg/kg dry weight (Circle One)

- |                                      |                                      |
|--------------------------------------|--------------------------------------|
| 1. <u>Aluminum</u>                   | 13. <u>Magnesium</u>                 |
| 2. <u>Antimony</u>                   | 14. <u>Manganese</u>                 |
| 3. <u>Arsenic</u> <u>1.0 UF</u>      | 15. <u>Mercury</u>                   |
| 4. <u>Barium</u>                     | 16. <u>Nickel</u>                    |
| 5. <u>Beryllium</u>                  | 17. <u>Potassium</u>                 |
| 6. <u>Cadmium</u> <u>1.50 UFR</u>    | 18. <u>Selenium</u>                  |
| 7. <u>Calcium</u>                    | 19. <u>Silver</u>                    |
| 8. <u>Chromium</u>                   | 20. <u>Sodium</u>                    |
| 9. <u>Cobalt</u>                     | 21. <u>Thallium</u>                  |
| 10. <u>Copper</u>                    | 22. <u>Tin</u>                       |
| 11. <u>Iron</u>                      | 23. <u>Vanadium</u>                  |
| 12. <u>Lead</u> <u>1.50UF 76 FPK</u> | 24. <u>Zinc</u> <u>0.4 UF 27 FPK</u> |
| Cyanide _____                        | Percent Solids (X) _____             |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Lab Manager Greil Solomon

Ref 2

Form 1

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
AM-06-3

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

ug/liter

ug/l or mg/kg dry weight (Circle One)

|                                  |                                |
|----------------------------------|--------------------------------|
| 1. <u>Aluminum</u>               | 13. <u>Magnesium</u>           |
| 2. <u>Antimony</u>               | 14. <u>Manganese</u>           |
| 3. <u>Arsenic</u> <u>1.0 UF</u>  | 15. <u>Mercury</u>             |
| 4. <u>Barium</u>                 | 16. <u>Nickel</u>              |
| 5. <u>Beryllium</u>              | 17. <u>Potassium</u>           |
| 6. <u>Cadmium</u> <u>.50 UFR</u> | 18. <u>Selenium</u>            |
| 7. <u>Calcium</u>                | 19. <u>Silver</u>              |
| 8. <u>Chromium</u>               | 20. <u>Sodium</u>              |
| 9. <u>Cobalt</u>                 | 21. <u>Thallium</u>            |
| 10. <u>Copper</u>                | 22. <u>Tin</u>                 |
| 11. <u>Iron</u>                  | 23. <u>Vanadium</u>            |
| 12. <u>Lead</u> <u>.50 UF</u>    | 24. <u>Zinc</u> <u>0.4 UPS</u> |
| Cyanide _____                    | Percent Solids (Z) _____       |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Lab Manager Geil Solomon/pmk

Ref-2

Form 1

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
AM-06-4

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SDW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

no filter

ug/L or mg/kg dry weight (Circle One)

|                                  |                                |
|----------------------------------|--------------------------------|
| 1. <u>Aluminum</u>               | 13. <u>Magnesium</u>           |
| 2. <u>Antimony</u>               | 14. <u>Manganese</u>           |
| 3. <u>Arsenic</u> <u>1.0 UF</u>  | 15. <u>Mercury</u>             |
| 4. <u>Barium</u>                 | 16. <u>Nickel</u>              |
| 5. <u>Beryllium</u>              | 17. <u>Potassium</u>           |
| 6. <u>Cadmium</u> <u>0.5 UFR</u> | 18. <u>Selenium</u>            |
| 7. <u>Calcium</u>                | 19. <u>Silver</u>              |
| 8. <u>Chromium</u>               | 20. <u>Sodium</u>              |
| 9. <u>Cobalt</u>                 | 21. <u>Thallium</u>            |
| 10. <u>Copper</u>                | 22. <u>Tin</u>                 |
| 11. <u>Iron</u>                  | 23. <u>Vanadium</u>            |
| 12. <u>Lead</u> <u>0.5 UF</u>    | 24. <u>Zinc</u> <u>0.4 UPS</u> |
| Cyanide _____                    | Percent Solids (X) _____       |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Lab Manager Gail Solomon

Ref-2

Form I

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 VTS: 8-557-2490

EPA Sample No.  
AM-06-5

Date 8-14-86

INORGANIC ANALYSIS DATA SHEET

LAB NAME Hittman Ebasco Assoc., Inc.

CASE NO. SAS 2356 H

SOW NO. 7/84

LAB SAMPLE ID. NO. NA

QC REPORT NO. 53

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil \_\_\_\_\_ Sludge \_\_\_\_\_ Other X

no filter

ug/L or mg/kg dry weight (Circle One)

|                                  |                                |
|----------------------------------|--------------------------------|
| 1. <u>Aluminum</u>               | 13. <u>Magnesium</u>           |
| 2. <u>Antimony</u>               | 14. <u>Manganese</u>           |
| 3. <u>Arsenic</u> <u>1.0 UF</u>  | 15. <u>Mercury</u>             |
| 4. <u>Barium</u>                 | 16. <u>Nickel</u>              |
| 5. <u>Beryllium</u>              | 17. <u>Potassium</u>           |
| 6. <u>Cadmium</u> <u>0.5 UFR</u> | 18. <u>Selenium</u>            |
| 7. <u>Calcium</u>                | 19. <u>Silver</u>              |
| 8. <u>Chromium</u>               | 20. <u>Sodium</u>              |
| 9. <u>Cobalt</u>                 | 21. <u>Thallium</u>            |
| 10. <u>Copper</u>                | 22. <u>Tin</u>                 |
| 11. <u>Iron</u>                  | 23. <u>Vanadium</u>            |
| 12. <u>Lead</u> <u>0.5 UF</u>    | 24. <u>Zinc</u> <u>0.4 UFS</u> |
| Cyanide _____                    | Percent Solids (Z) _____       |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Lab Manager Gail Solomon/RUC

*R-4.2*

REGION VIII SUMMARY OF DATA QUALITY ASSURANCE REVIEW

Case No. 6218 Project No. 8608-05  
Site Richardson Flats  
Contractor Laboratory Hittman Ebasco  
Data Reviewer L Roberts Date of Review 9/5/86  
Sample Matrix Soil - Inorganic

Sample No. MHD 861 \_\_\_\_\_  
MHD 862 \_\_\_\_\_  
MHD 863 \_\_\_\_\_  
MHD 864 \_\_\_\_\_  
MHD 865 \_\_\_\_\_

- ( ) Data are acceptable for use  
( ☒ ) Data are acceptable for use with qualification noted <sup>below</sup> ~~above~~  
( ) Data are preliminary - pending action or verification  
( ) Data are unacceptable

Action required by DPO?

No ☒ Yes \_\_\_\_\_ Following items require action \_\_\_\_\_

Action required by Project Officer (PO)?

No ☒ Yes \_\_\_\_\_

**Following are our findings:**

The As, Hg, Sb, Se and Tl results are flagged with an R due to spike recoveries beyond the  $\pm 25\%$  control limits. The As, Hg and Tl matrix spike recoveries are very high, this may indicate a positive bias. The duplicate RPD results for Cr, Al, Ca, Mg, Hg and Zn were between 39 and 61%. These results should be considered quantitative estimates. The serial dilution results for Be, Co, K, Sb and V indicate that an interference may be present for these elements.

The laboratory submitted corrected Form I's because they had originally miscalculated the matrix spike recoveries. The new Form I's are difficult to read and confusing.



Ref. 2

FORM A

Inorganic Data Completeness Checklist

- ☒ Inorganic analysis data sheets
- ☒ Initial calibration and calibration verification results
- ☒ Continuing calibration verification
- ☒ Instrument Detection limits
- ☒ Duplicate results
- ☒ Spike results
- ☒ ICP interference check sample
- ☒ Blank results
- ☒ Serial Dilution Results
- ☒ Raw data for calibration standards
- ☒ Raw data for blanks
- ☒ Raw data for samples
- ☒ Raw data for duplicates
- ☒ Raw data for spikes
- ☒ Raw data for furnace AA
- ☒ Percent solids calculation - soils only
- ☒ Traffic Reports

Ref 2

FORM B

Initial calibration data were reviewed. Initial calibration data were included in the package and met all contract requirements.

YES ☒

NO ☐

Comments:

Continuing calibration data were reviewed and these data met all contract requirements.

YES ☒

NO ☐

Comments:

A blank was run with every twenty samples or less per case.

YES ☒

NO ☐

Comments:

How many elements were detected above the required detection limit? 0

How many elements were detected at greater than one half the amount detected in any sample? 0

Comments:

Ref 5

FORM C

The interference check sample was run twice per eight hour shift. No massive interferences were present.

YES \_\_\_\_\_

NO ☒

Comments:

Final ICS for antimony was not analyzed

All matrix spike requirements were met.

YES \_\_\_\_\_

NO ☒

Comments:

As 280% Sb 67%  
Hg 150%  
Se 55%  
Cl 218%

As, Hg & Cl results may be biased high.  
N flag applied to results.

Laboratory miscalculated spike recoveries and submitted new forms.  
A duplicate sample was run with every twenty or fewer samples of a similar matrix, or one per case, whichever is more frequent.

YES ☒

NO \_\_\_\_\_

Cr 61% RPD  
Al 39%  
Ca 56%  
Mg 58%  
Hg 57%  
Zn 42% ↓

Limit - 35 RPD  
\* flag applied

The RPD's were tabulated.

YES ☒

NO \_\_\_\_\_

Comments:

All inorganic detection limits met the contract requirements.

YES ☒

NO \_\_\_\_\_

Comments:

*Ref. R*

FORM D

All Laboratory Control Samples met specified contract limits.

YES ☒

NO ☐

Comments:

Serial Dilution requirements were met.

YES ☐

NO ☒

*Results > 10%*  
Sb 34% V 68%  
Co 14% Be 12%  
K 15%

*E play applied*  
*Laboratory did not play data.*

The Furnace Atomic Absorption Analysis Scheme was followed correctly.

YES ☒

NO ☐

All holding times were met.

YES ☒

NO ☐

Comments:

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

Ref. 2  
Date 8/22/86

COVER PAGE  
INORGANIC ANALYSES DATA PACKAGE

Lab Name HITTMAN EBASCO ASSOC. INC.

Case No. 6218

SOW No. 7/85

Q.C. Report No. 55

Lab Receipt Date 7/16/86

Sample Numbers

| EPA No. | Lab ID No.   | EPA No. | Lab ID No. |
|---------|--------------|---------|------------|
| MHD 861 | <del>★</del> |         |            |
| 862     |              |         |            |
| 863     |              |         |            |
| 864     |              |         |            |
| 865     |              |         |            |
|         |              |         |            |
|         |              |         |            |
|         |              |         |            |
|         |              |         |            |

Comments: ★ - same as EPA #. CV - cold Vapor  
Sb - furnace spike levels used for ICAP analysis,  
ICS (final) not run. Analyst will be more careful in  
the future.

ICP interelement and background corrections applied? Yes ☒ No ☐.

If yes, corrections applied before ☒ or after ☐ generation of raw data.

Footnotes:

NR - Not required by contract at this time

Form 1:

Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract-required detection limit, report the value in brackets (i.e., [10]). Indicate the analytical method used with P (for ICP), A (for Flame AA) or F (for Furnace AA).

U - Indicates element was analyzed for but not detected. Report with the instrument detection limit value (e.g., 10U).

E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.

s - Indicates value determined by Method of Standard Addition.

N - Indicates spike sample recovery is not within control limits.

\* - Indicates duplicate analysis is not within control limits.

+ - Indicates the correlation coefficient for method of standard addition is less than 0.995

M - Indicates duplicate injection results exceeded control limits.

Indicate method used: P for ICP; A for Flame AA and F for Furnace.

Corrected form

Ref 2

Form I

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
MHD 861

Date 8/22/86

INORGANIC ANALYSIS DATA SHEET

LAB NAME HITTMAN EBASCO ASSOC. INC.

CASE NO. 6218

SOW NO. 7/85

LAB SAMPLE ID. NO. N/A

QC REPORT NO. 55

Elements Identified and Measured

Concentration: Low ☒ Medium ☐  
Matrix: Water ☐ Soil ☒ Sludge ☐ Other ☐

ug/L or mg/kg dry weight (Circle One)

|              |                                  |                    |               |
|--------------|----------------------------------|--------------------|---------------|
| 1. Aluminum  | 11300 PA*                        | 13. Magnesium      | 36700 PA*     |
| 2. Antimony  | 89 PN E                          | 14. Manganese      | 15400 PA* KH  |
| 3. Arsenic   | 7.5 FNS                          | 15. Mercury        | 0.20 V NA     |
| 4. Barium    | 144 PA* KH                       | 16. Nickel         | 62 PA* KH     |
| 5. Beryllium | 44 PA* KH 43 PA* <sup>SE</sup> E | 17. Potassium      | [965] P E     |
| 6. Cadmium   | 12 PA*                           | 18. Selenium       | 1.04 FN       |
| 7. Calcium   | 129000 PA*                       | 19. Silver         | 2.04 F        |
| 8. Chromium  | 743 F* S                         | 20. Sodium         | 5130 P        |
| 9. Cobalt    | 159 PA* KH E                     | 21. Thallium       | 2.04 FN       |
| 10. Copper   | 100 PA* KH                       | 22. Vanadium       | 1390 PA* KH E |
| 11. Iron     | 103000 P                         | 23. Zinc           | 84 PA*        |
| 12. Lead     | 418 F*                           | Percent Solids (%) | 98.7          |
| Cyanide      | NR                               |                    |               |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Color - white; Clarity - opaque; texture medium

Lab Manager Paul Salomon

Corrected Form

Ref. 2

Form I

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.

MHD 862

Date 8/22/86

INORGANIC ANALYSIS DATA SHEET

LAB NAME HITTMAN EBASCO ASSOC. INC.

CASE NO. 6218

SOW NO. 7/85

LAB SAMPLE ID. NO. N/A

QC REPORT NO. 55

Elements Identified and Measured

Concentration: Low ☒ Medium ☐  
Matrix: Water ☐ Soil ☒ Sludge ☐ Other ☐

ug/L or ng/kg dry weight (Circle One)

|              |             |                    |          |
|--------------|-------------|--------------------|----------|
| 1. Aluminum  | 3790P*      | 13. Magnesium      | 14200P*  |
| 2. Antimony  | 18PN, E     | 14. Manganese      | 284PA**  |
| 3. Arsenic   | 87FN        | 15. Mercury        | 1.0CVN*  |
| 4. Barium    | 95PA**      | 16. Nickel         | 12PA**   |
| 5. Beryllium | 0.4UPA** E  | 17. Potassium      | [436]P E |
| 6. Cadmium   | 3.9P*       | 18. Selenium       | 1.0UFNS  |
| 7. Calcium   | 46900P*     | 19. Silver         | 2.0UF    |
| 8. Chromium  | 17F* S      | 20. Sodium         | [336]P   |
| 9. Cobalt    | [2.9]PA** E | 21. Thallium       | 2.4FN    |
| 10. Copper   | 21PA**      | 22. Vanadium       | 11PA** E |
| 11. Iron     | 10600P      | 23. Zinc           | 440P*    |
| 12. Lead     | 4.77F*      | Percent Solids (X) | 98.2     |
| Cyanide      | NR          |                    |          |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: color-white; clarity-opaque; texture coarse

Lab Manager Neil Solomon

Corrected Form

Ref. 2

Form I

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.

MHD863

Date 8/22/86

INORGANIC ANALYSIS DATA SHEET

LAB NAME HITTMAN EBASCO ASSOC. INC.

CASE NO. 6218

SOW NO. 7/85

LAB SAMPLE ID. NO. N/A

QC REPORT NO. 55

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil X Sludge \_\_\_\_\_ Other \_\_\_\_\_

ug/L or (mg/kg) dry weight (Circle One)

|              |                        |                    |           |
|--------------|------------------------|--------------------|-----------|
| 1. Aluminum  | 11900P*                | 13. Magnesium      | 55800P*   |
| 2. Antimony  | 70P N E                | 14. Manganese      | 8320PAKH  |
| 3. Arsenic   | 7.7FN                  | 15. Mercury        | 0.5CV N*  |
| 4. Barium    | 200PAKH                | 16. Nickel         | 44PAKH    |
| 5. Beryllium | 5.2PAKH E              | 17. Potassium      | 1480 P E  |
| 6. Cadmium   | 5.2 <sup>10</sup> 12P* | 18. Selenium       | 1.0 UFN   |
| 7. Calcium   | 143000P*               | 19. Silver         | 2.0UF     |
| 8. Chromium  | 443F*                  | 20. Sodium         | 5620 P    |
| 9. Cobalt    | 14PAKH E               | 21. Thallium       | 2.0UFN    |
| 10. Copper   | 44PAKH                 | 22. Vanadium       | 561PAKH E |
| 11. Iron     | 94200P                 | 23. Zinc           | 331P*     |
| 12. Lead     | 133F*                  | Percent Solids (%) | 99.3      |
| Cyanide      | NR                     |                    |           |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Sample description: color-white; clarity-opaque; texture-medium

Lab Manager

John Solomon



Corrected Form

Ref. 2

Form I

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.  
MHD 864

Date 8/2/86

INORGANIC ANALYSIS DATA SHEET

LAB NAME HITTMAN EBASCO ASSOC. INC.

CASE NO. 6218

SOW NO. 7/85

LAB SAMPLE ID. NO. N/A

QC REPORT NO. 55

Elements Identified and Measured

Concentration: Low X Medium \_\_\_\_\_  
Matrix: Water \_\_\_\_\_ Soil X Sludge \_\_\_\_\_ Other \_\_\_\_\_

ug/L or mg/kg dry weight (Circle One)

|              |                        |                    |                        |
|--------------|------------------------|--------------------|------------------------|
| 1. Aluminum  | <u>10500P*</u>         | 13. Magnesium      | <u>3560P*</u>          |
| 2. Antimony  | <u>40PN E</u>          | 14. Manganese      | <u>112PAKH</u>         |
| 3. Arsenic   | <u>2.1UFN</u>          | 15. Mercury        | <u>ND. 4CV 0.5CVN*</u> |
| 4. Barium    | <u>668PAKH</u>         | 16. Nickel         | <u>21PAKH</u>          |
| 5. Beryllium | <u>16PKH 1.4RNKH E</u> | 17. Potassium      | <u>1160P E</u>         |
| 6. Cadmium   | <u>4.5P*</u>           | 18. Selenium       | <u>1.0UFN</u>          |
| 7. Calcium   | <u>6350P*</u>          | 19. Silver         | <u>2.1UF</u>           |
| 8. Chromium  | <u>21FKH 4.3F*S</u>    | 20. Sodium         | <u>1030UPKH (976)P</u> |
| 9. Cobalt    | <u>11PAKH E</u>        | 21. Thallium       | <u>2.1UFN</u>          |
| 10. Copper   | <u>15PAKH</u>          | 22. Vanadium       | <u>81PAKH E</u>        |
| 11. Iron     | <u>33900P</u>          | 23. Zinc           | <u>96P*</u>            |
| 12. Lead     | <u>3500FKH 13F*S</u>   | Percent Solids (2) | <u>97.3</u>            |
| Cyanide      | <u>NR</u>              |                    |                        |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: sample description: color-white; clarity-opaque; texture-coarse

Lab Manager John Solomon

Connecticut

Form I

U.S. EPA Contract Laboratory Program  
Sample Management Office  
P.O. Box 818 - Alexandria, VA 22313  
703/557-2490 FTS: 8-557-2490

EPA Sample No.

MHD 865

Date

8/22/86

INORGANIC ANALYSIS DATA SHEET

LAB NAME HITTMAN EBASCO ASSOC. INC.

CASE NO. 6218

SOW NO. 7/85

LAB SAMPLE ID. NO. N/A

QC REPORT NO. 55

Elements Identified and Measured

Concentration: Low ☒ Medium ☐  
Matrix: Water ☐ Soil ☒ Sludge ☐ Other ☐

ug/L or mg/kg dry weight (Circle One)

|              |                      |                    |           |
|--------------|----------------------|--------------------|-----------|
| 1. Aluminum  | 13200P*              | 13. Magnesium      | 5550P*    |
| 2. Antimony  | 104PN E              | 14. Manganese      | 1730PA/KH |
| 3. Arsenic   | 188FN                | 15. Mercury        | 3.9CVN*   |
| 4. Barium    | 225PA/KH             | 16. Nickel         | 34PA/KH   |
| 5. Beryllium | 3.1P* 3.1P* 1.0PA/KH | 17. Potassium      | 1960PE    |
| 6. Cadmium   | 38P*                 | 18. Selenium       | 6.9FNS    |
| 7. Calcium   | 14900P*              | 19. Silver         | 18F       |
| 8. Chromium  | 101F* 21F*S          | 20. Sodium         | 1320P     |
| 9. Cobalt    | 21PA/KH E            | 21. Thallium       | 13FN      |
| 10. Copper   | 222PA/KH             | 22. Vanadium       | 12PA/KH E |
| 11. Iron     | 46100P               | 23. Zinc           | 4630P*    |
| 12. Lead     | 3470F*S              | Percent Solids (Z) | 98.1      |
| Cyanide      | NR                   |                    |           |

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: sample description: color-white; clarity-opaque; texture-irregular

Lab Manager

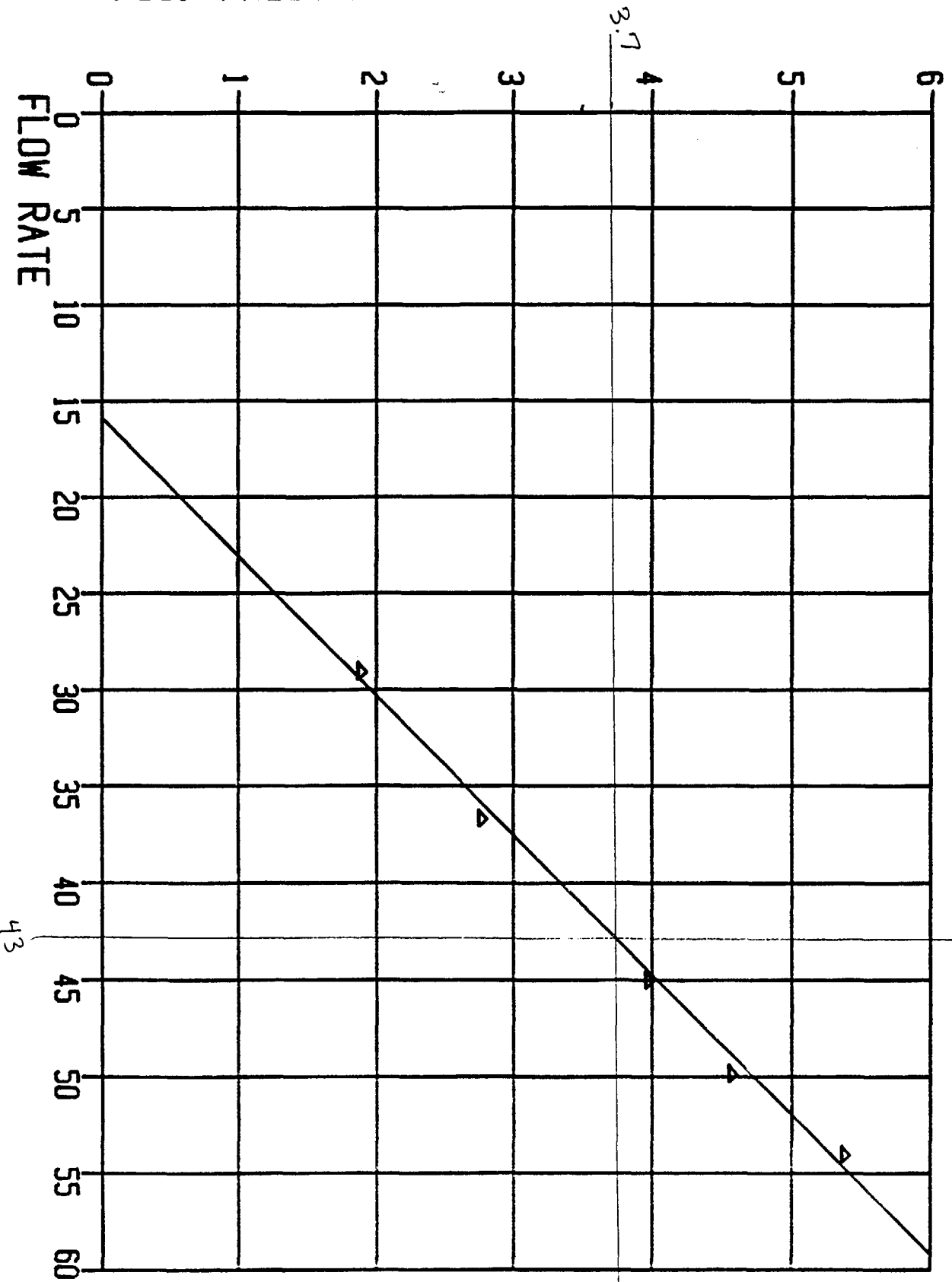
Garth Salomon

Ref 2

APPENDIX III  
CALIBRATION DATA

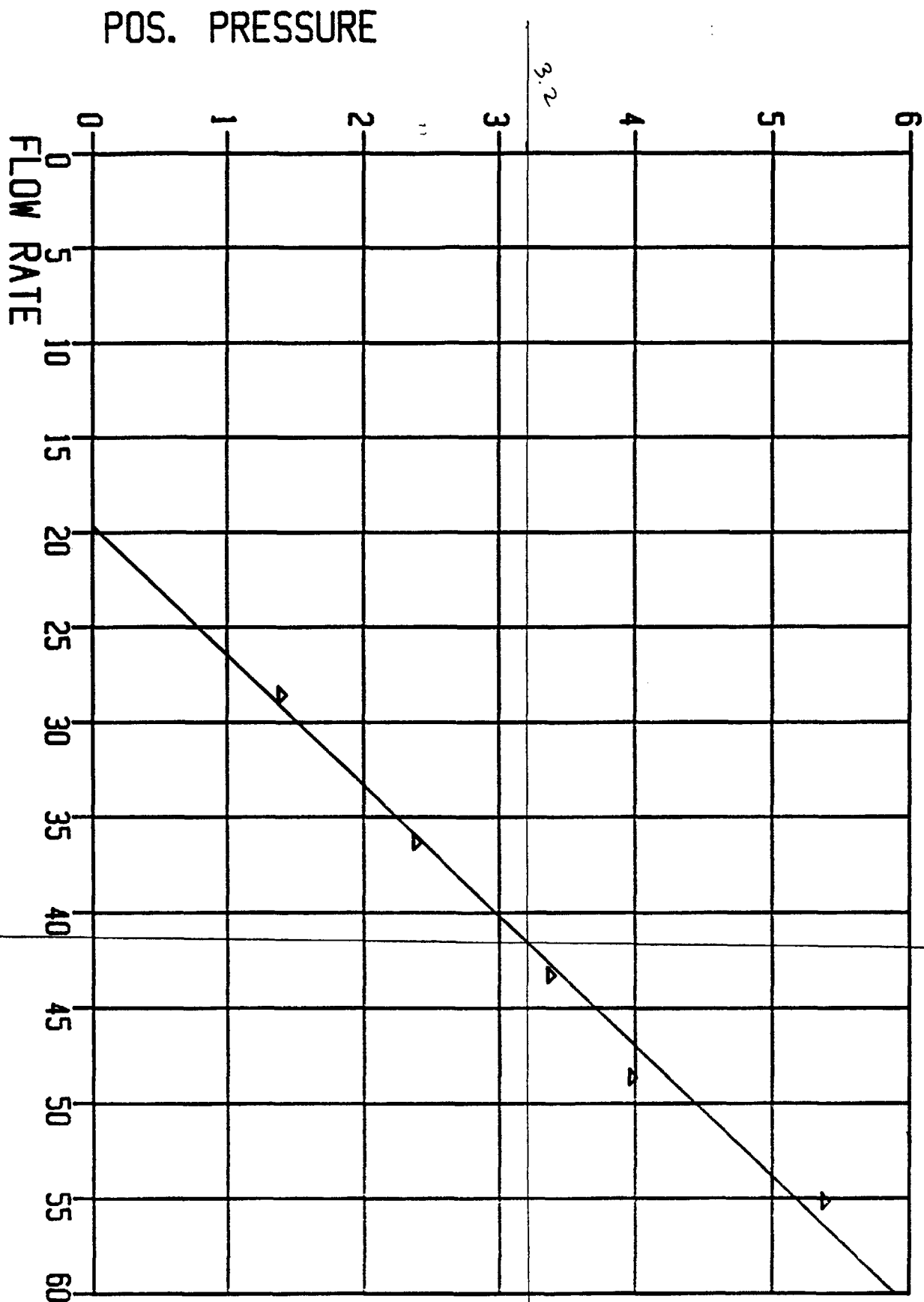
AM 01 DAY 1

POS. PRESSURE



Ref. 2

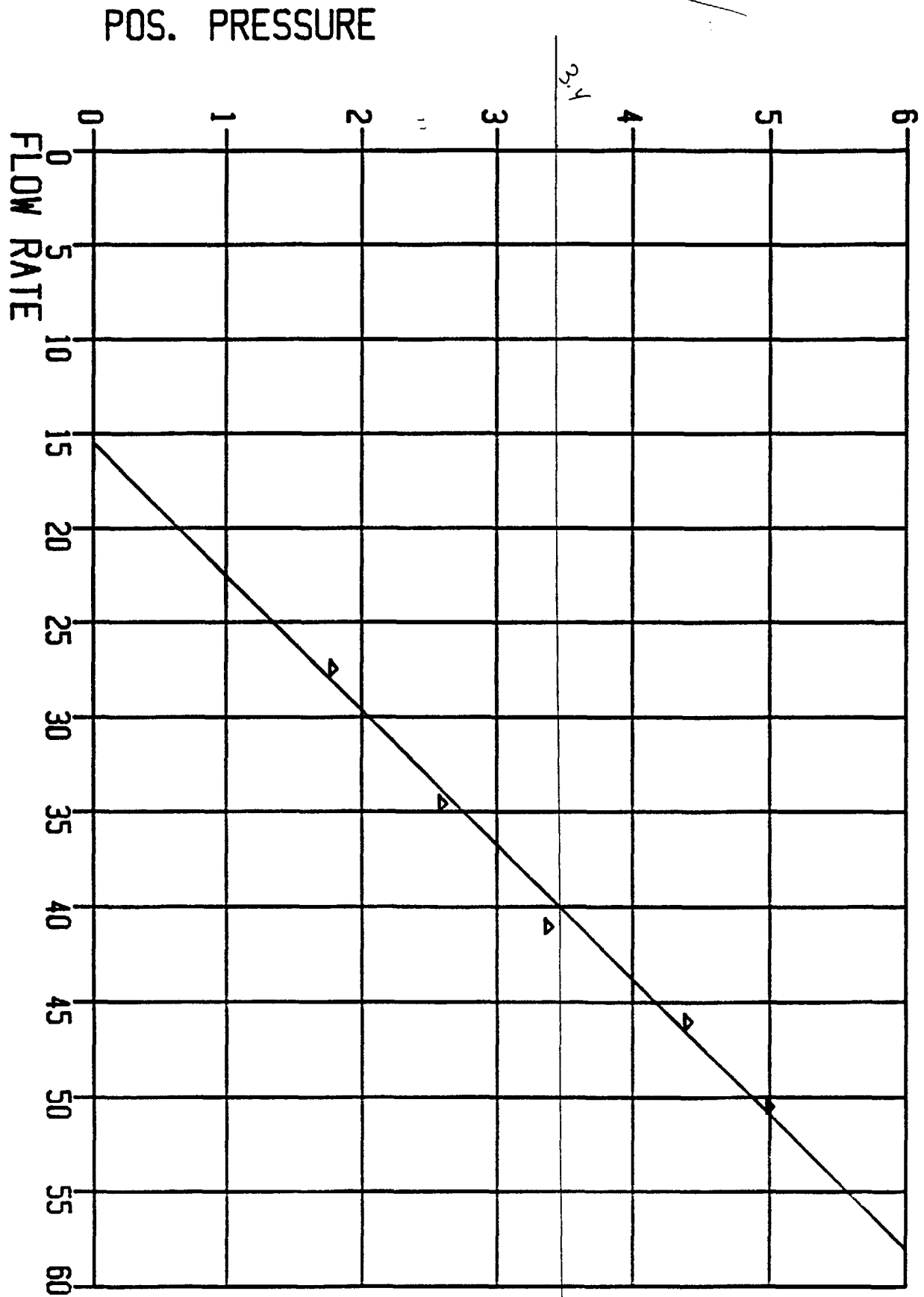
AM 02 DAY 1



Ref. 2

Blank

AM 03 DAY 1

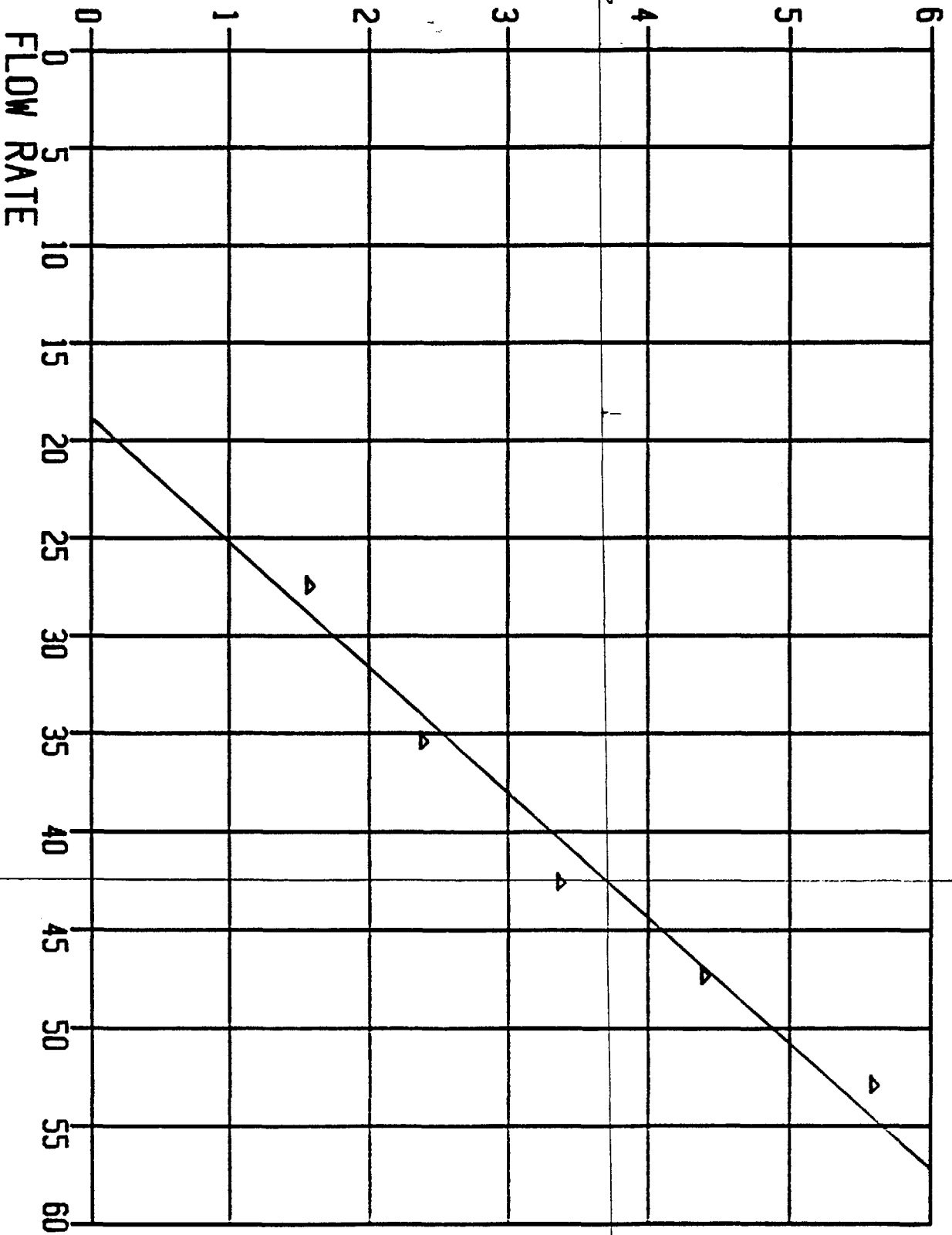


40

Ref

AM 04 DAY 1

POS. PRESSURE

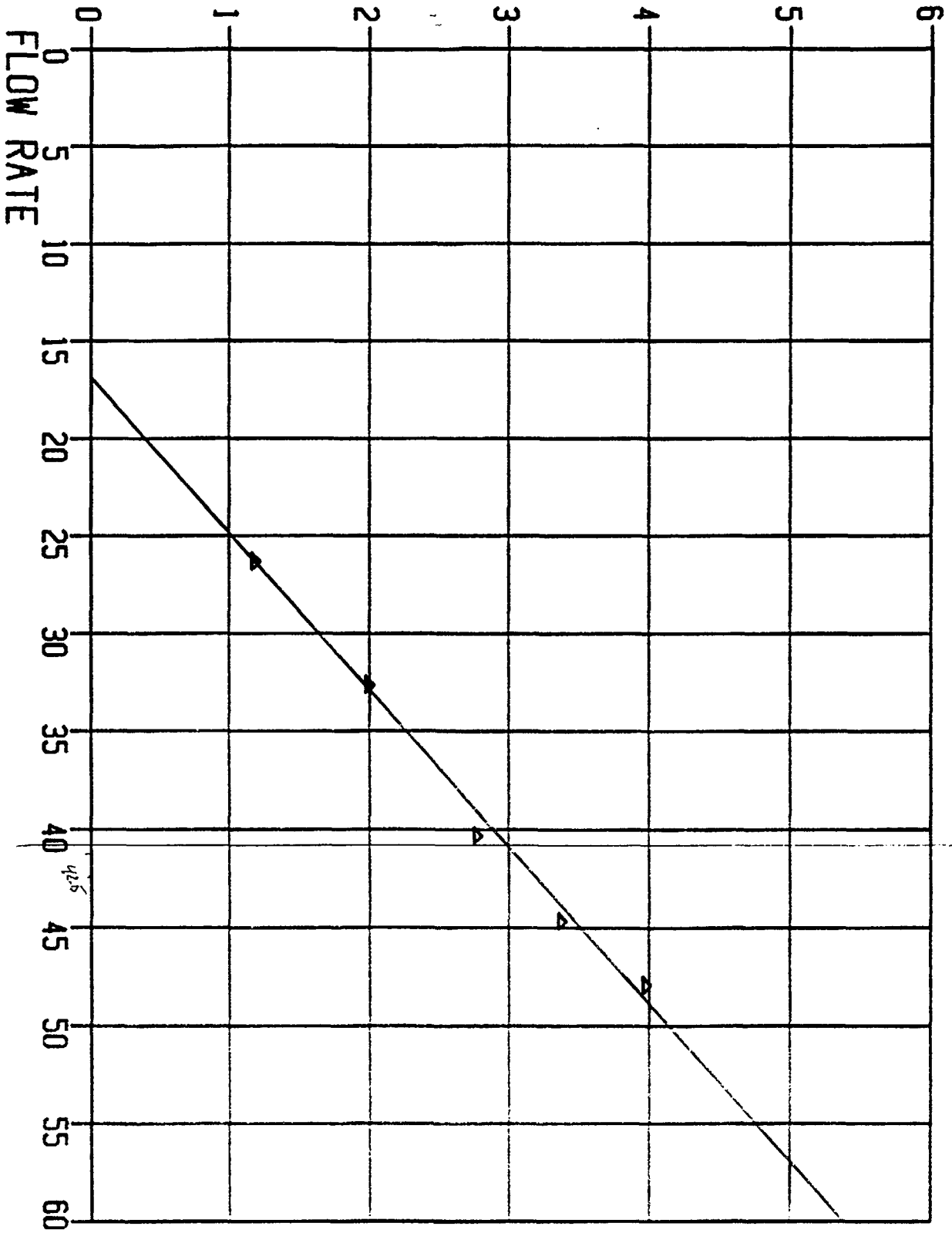


42

Ref. 2

AM 05 DAY 1

POS. PRESSURE



41

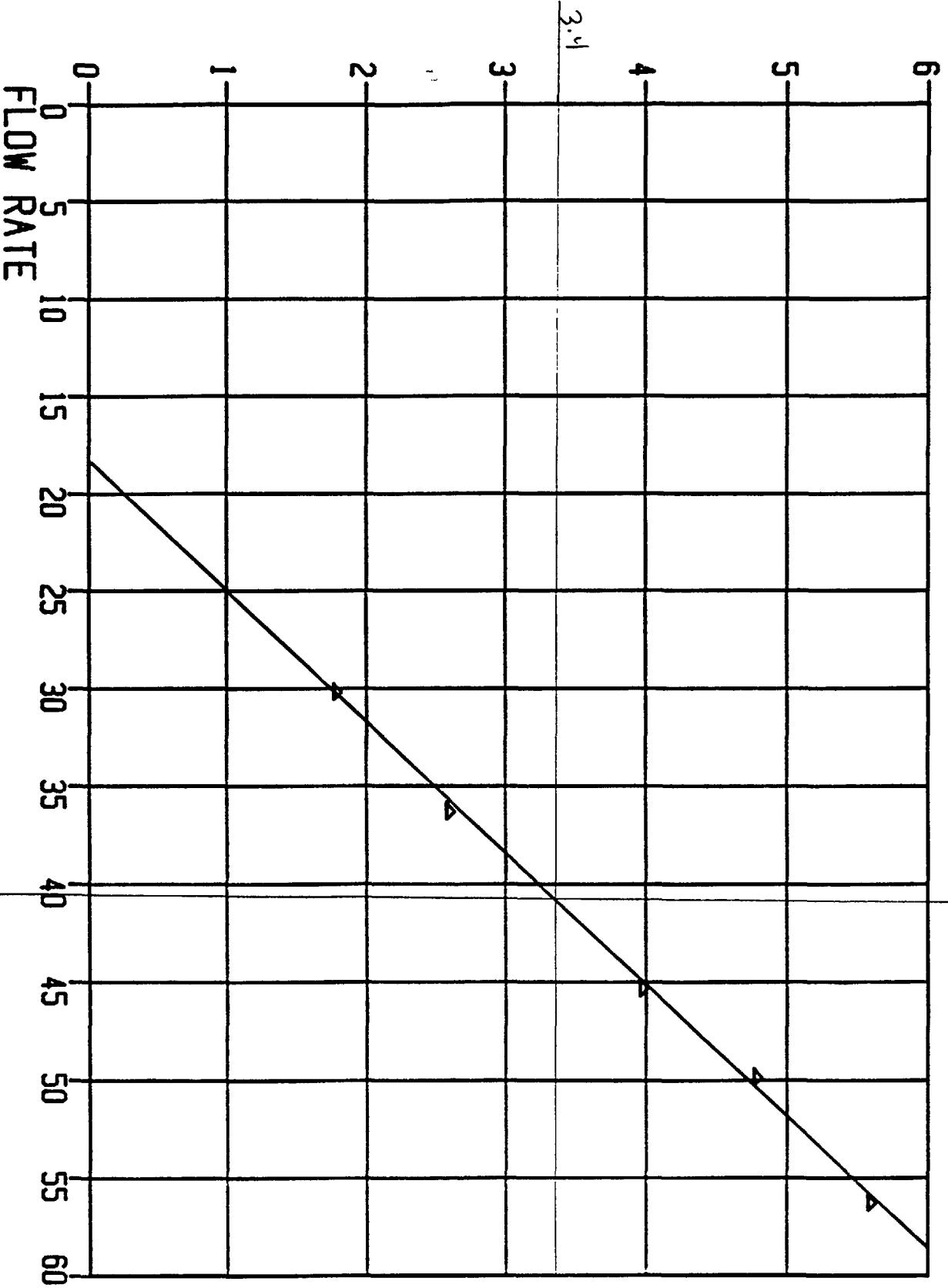
42.5

*Handwritten signature*



AM 01 DAY 2

POS. PRESSURE

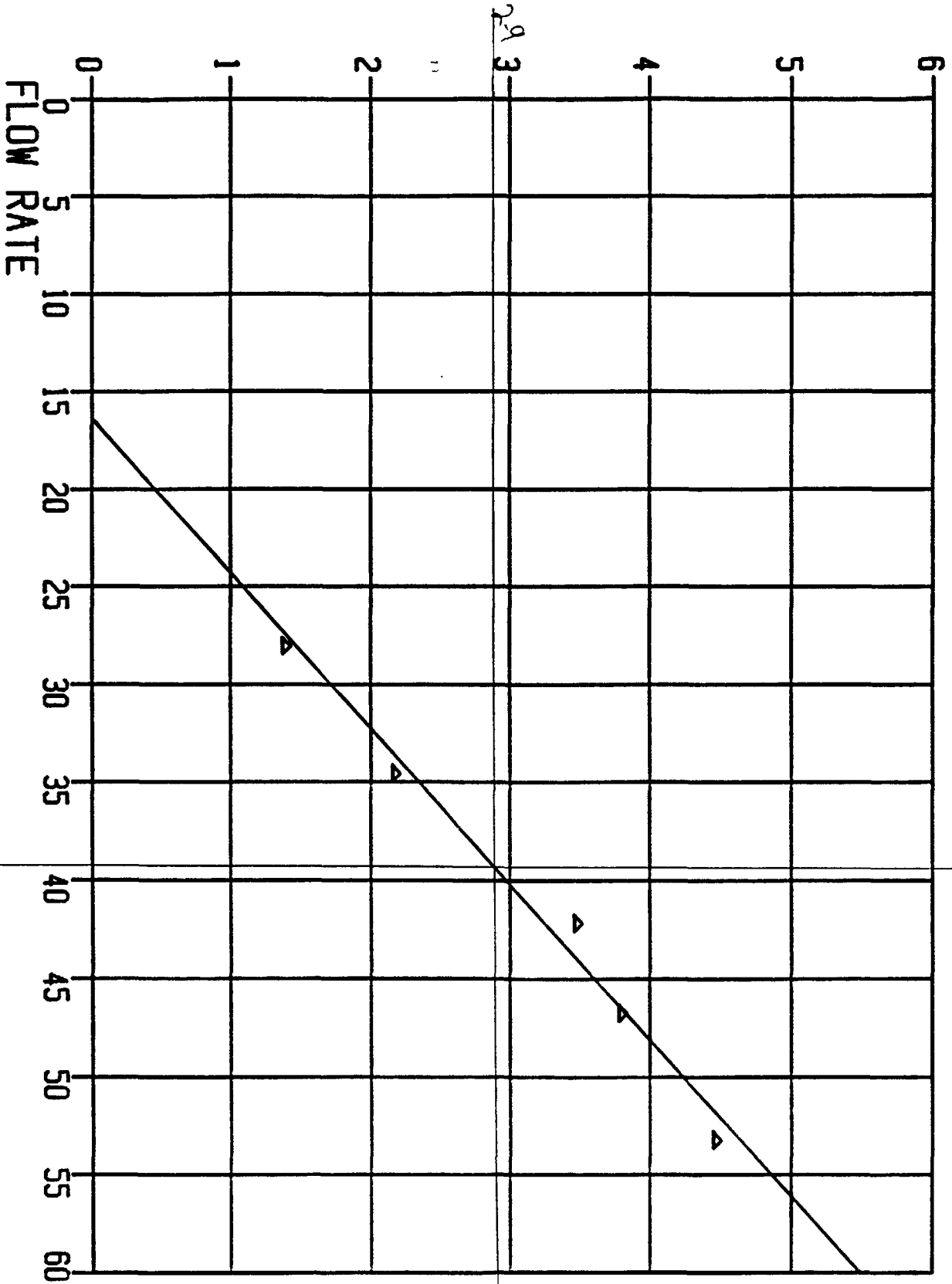


40.5

Ref. 2

AM 02 DAY 2

POS. PRESSURE

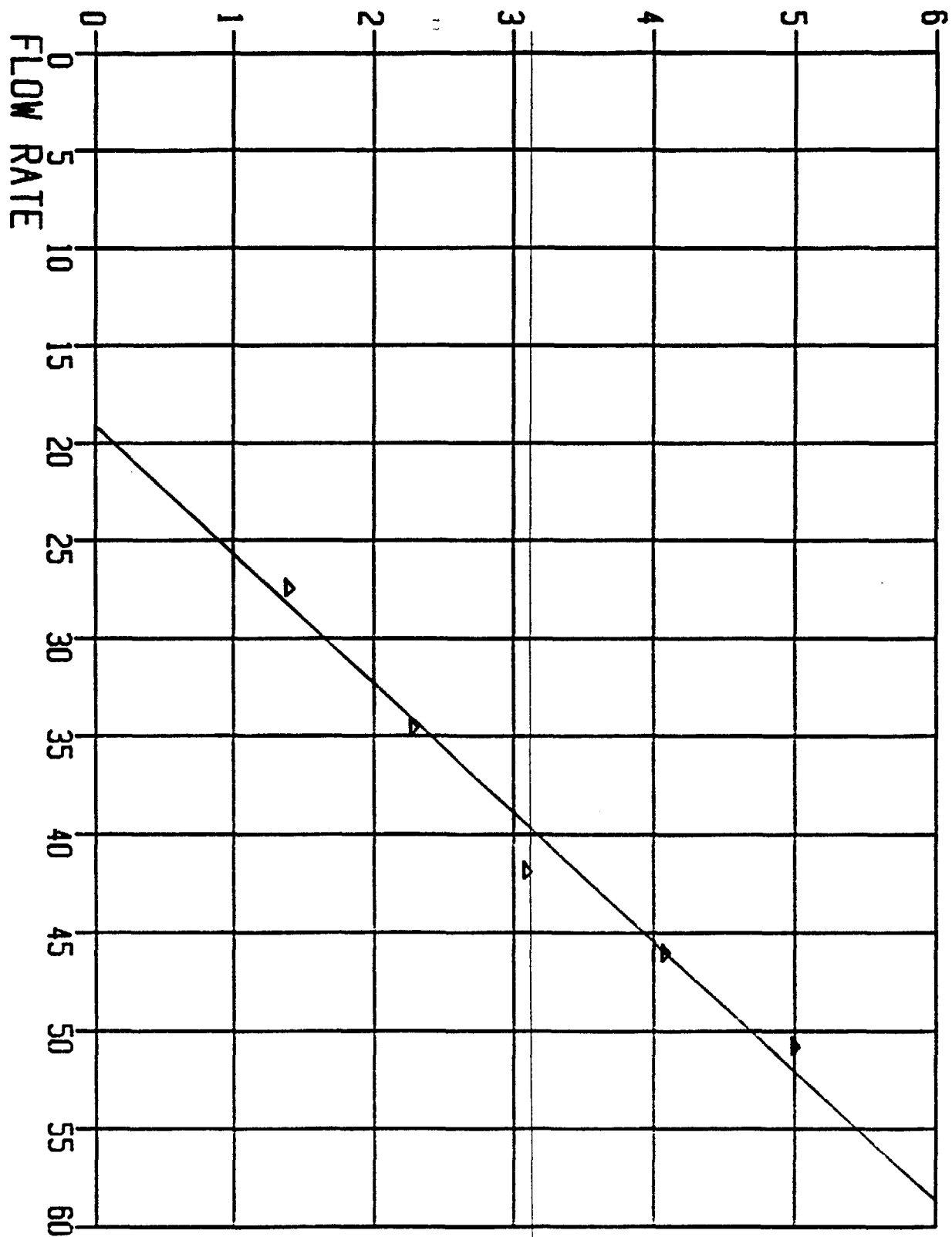


39

24.2

POS. PRESSURE

AM 03 DAY 2

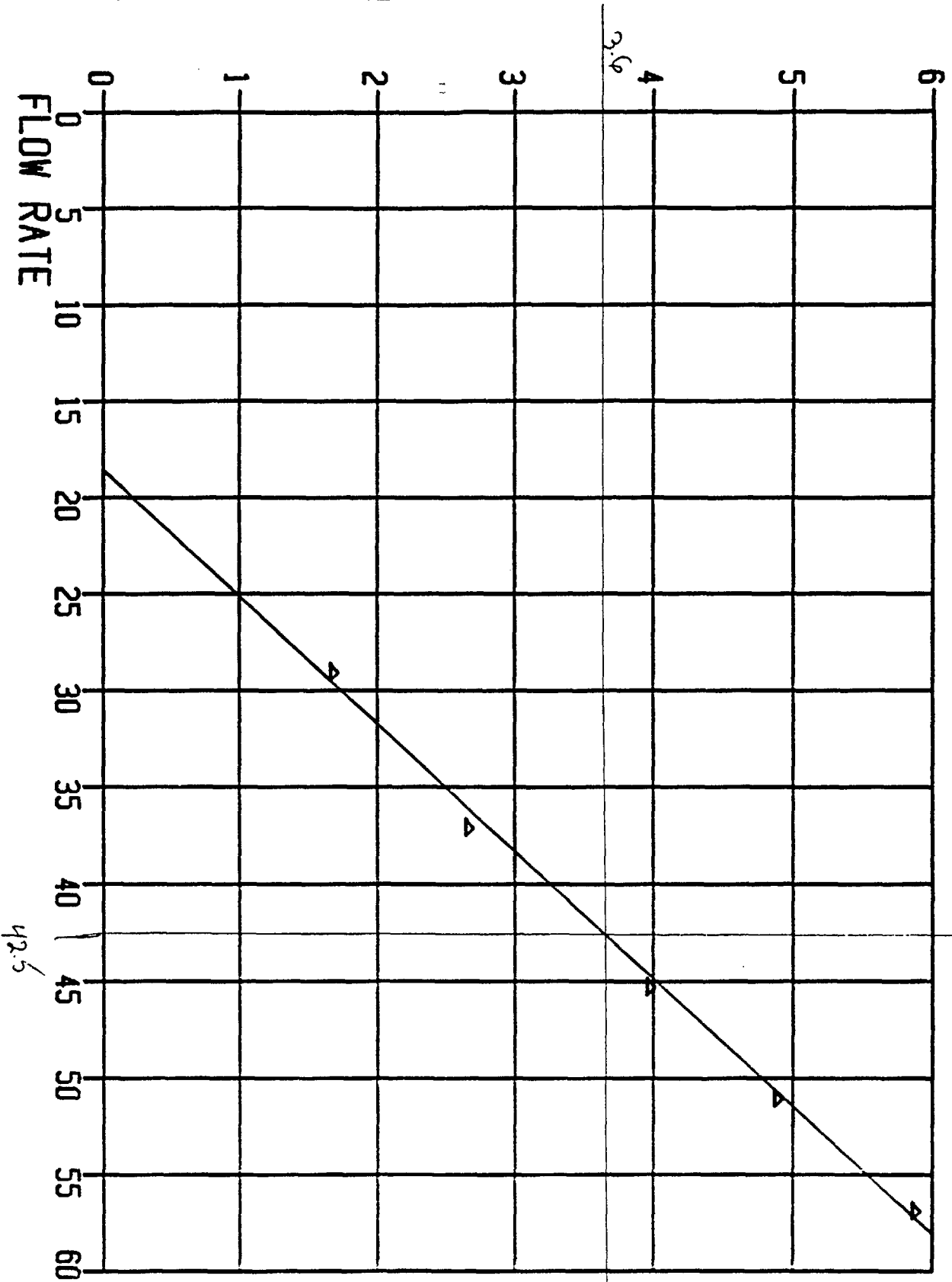


40  
39.5

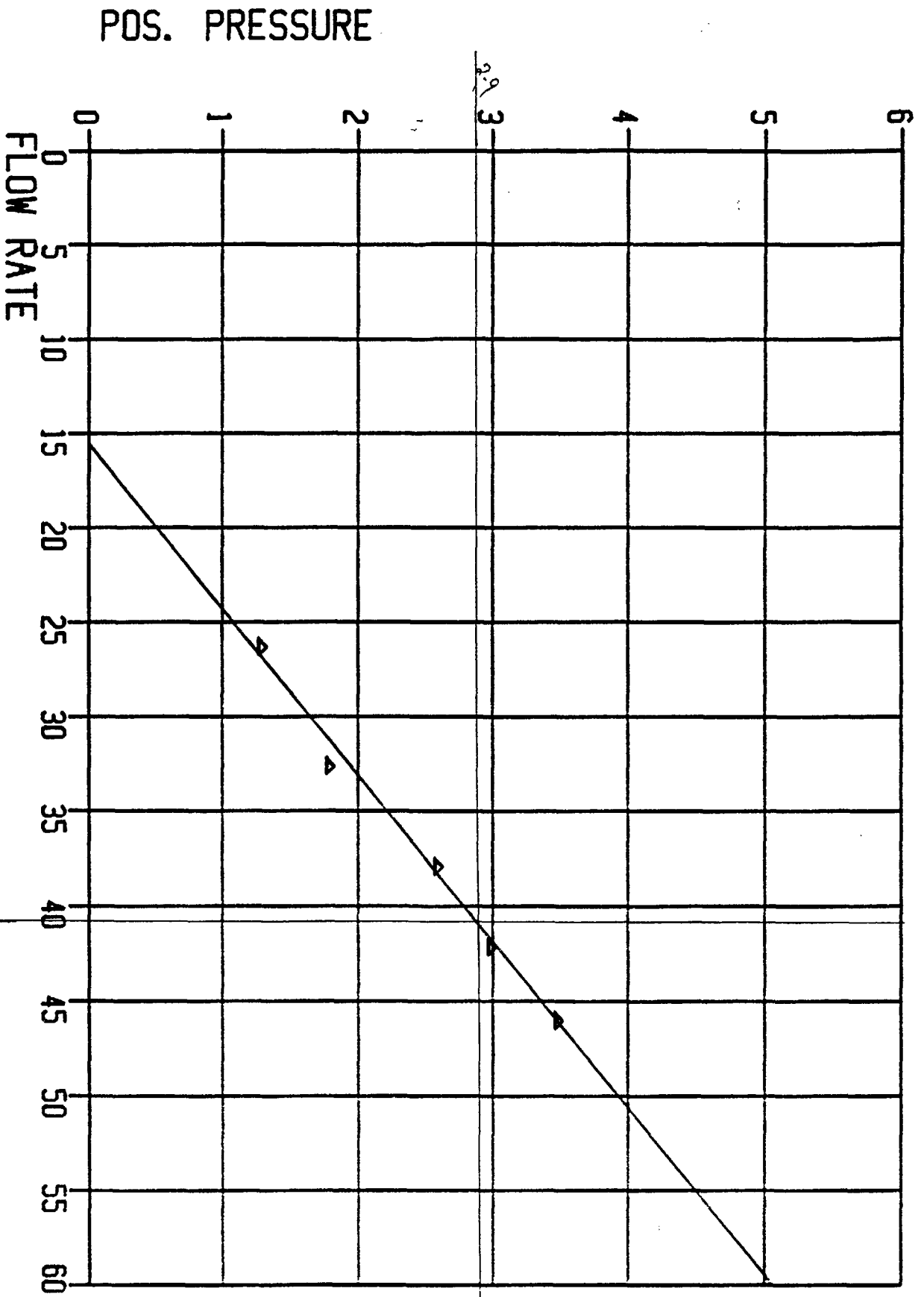
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AM 04 DAY 2

POS. PRESSURE

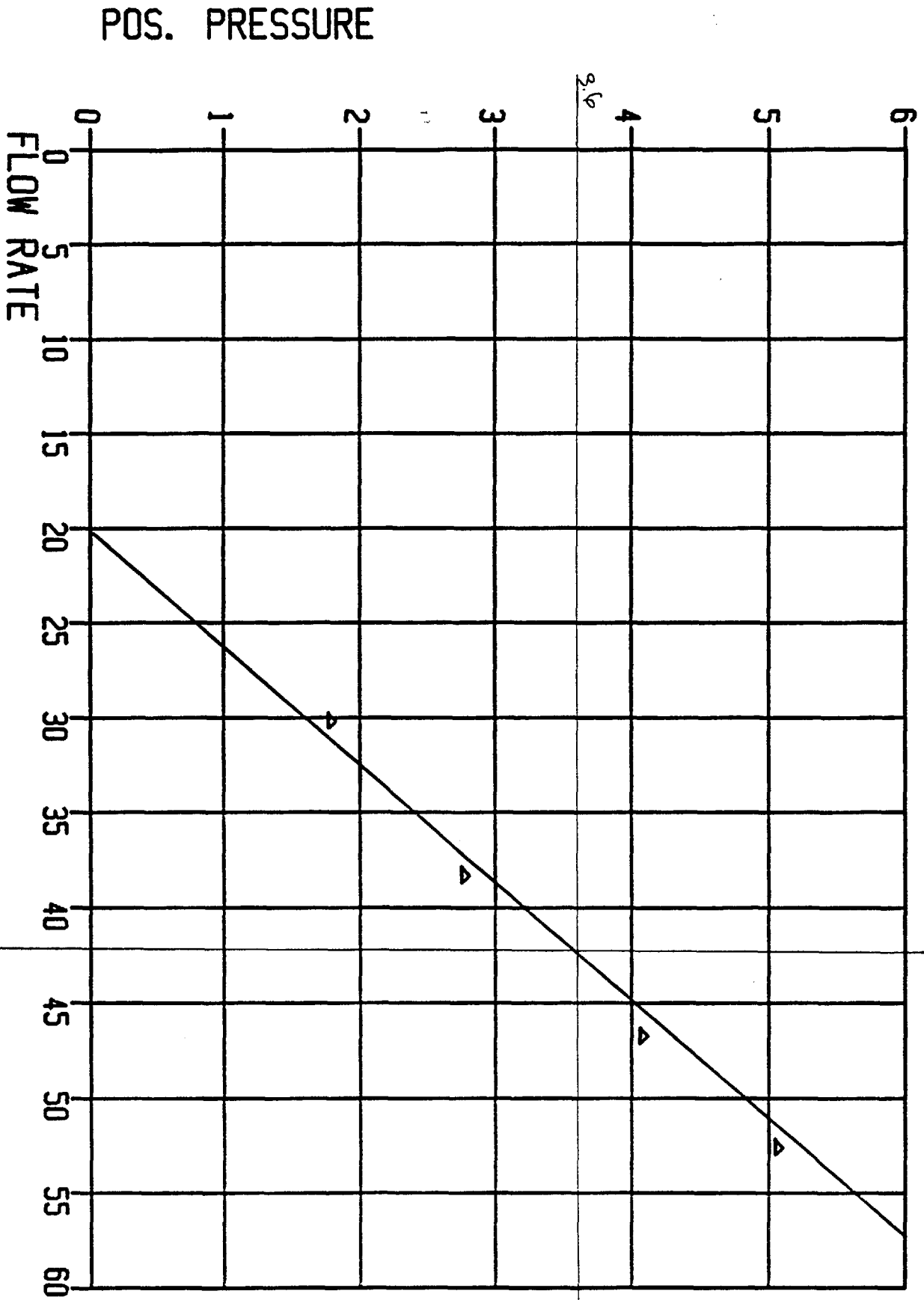


AM 05 DAY 2



Ref

AM 01 DAY 3

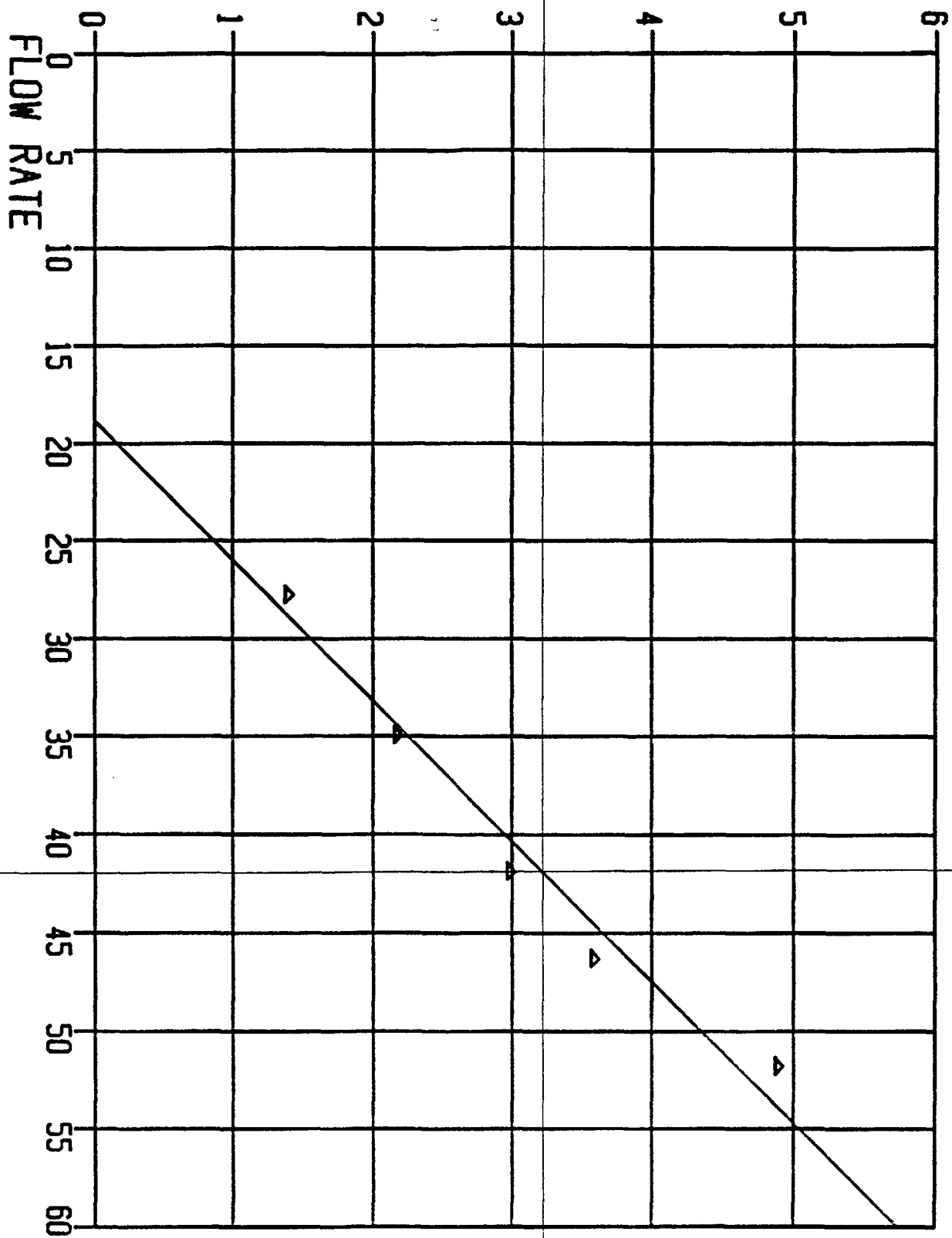


42.5

Ref 2

POS. PRESSURE

AM 02 DAY 3

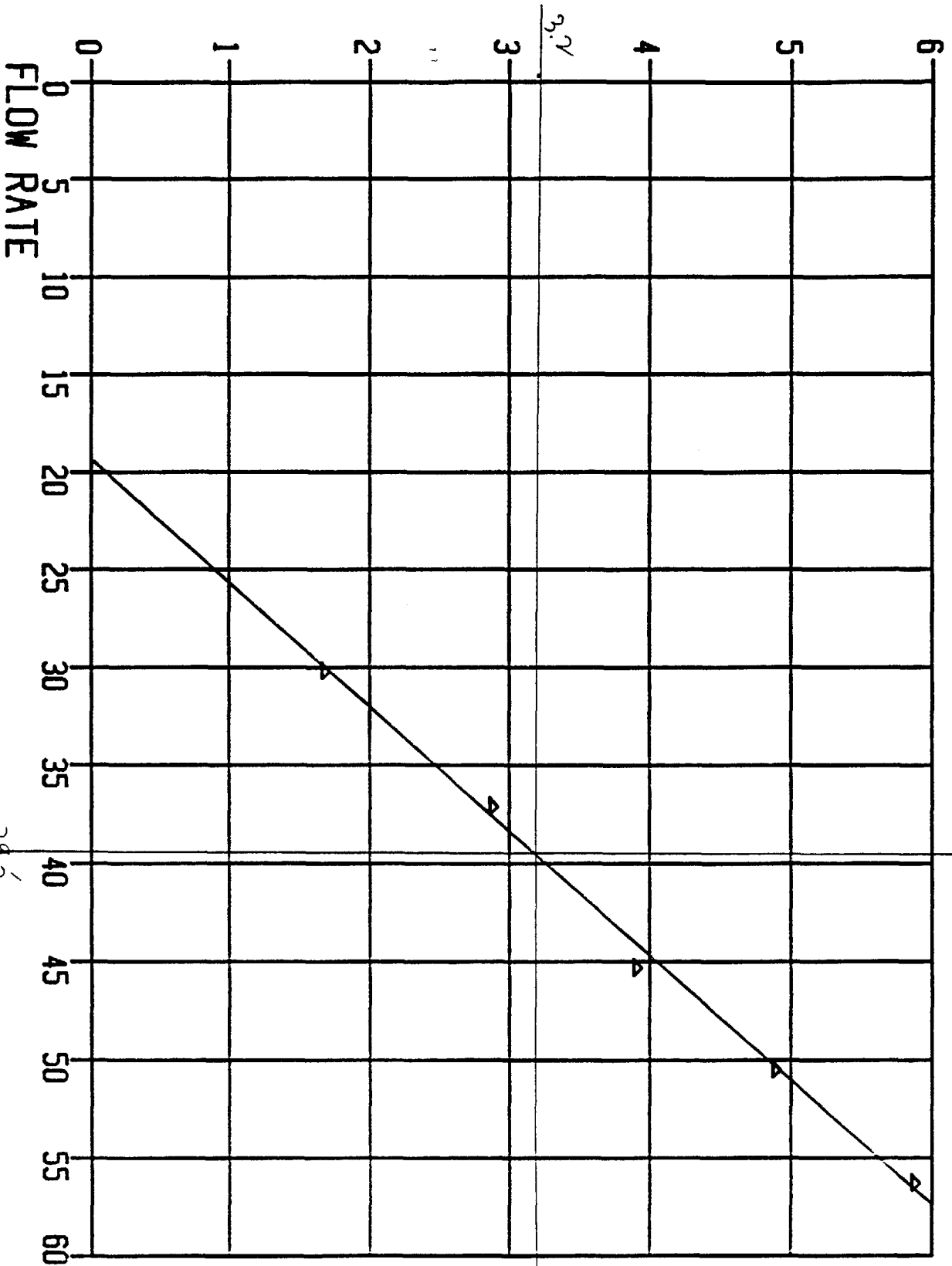


42

*Ref. 2*

AM 03 DAY 3

POS. PRESSURE



39.5

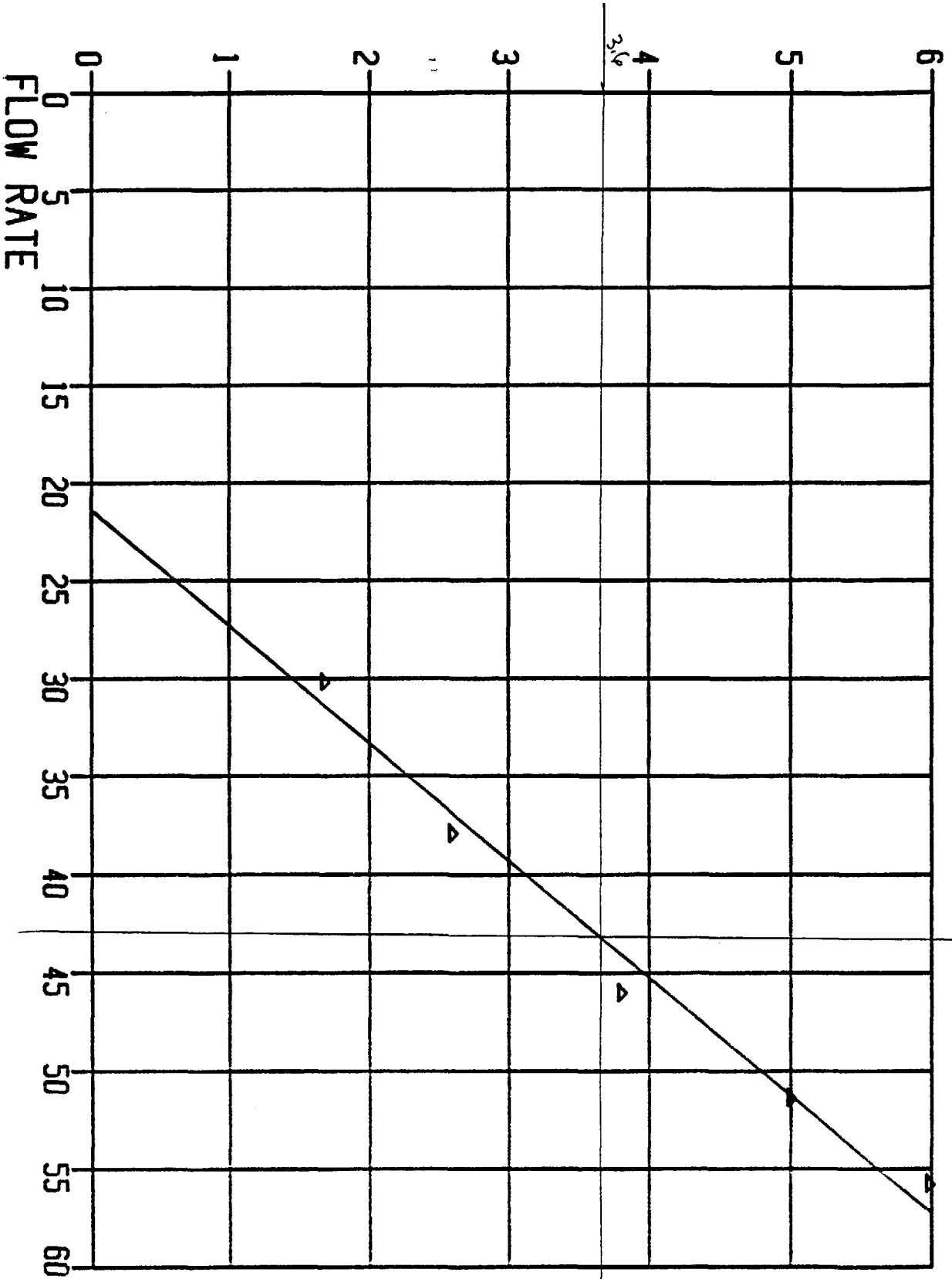
3.7

2.0



AM 04 DAY 3

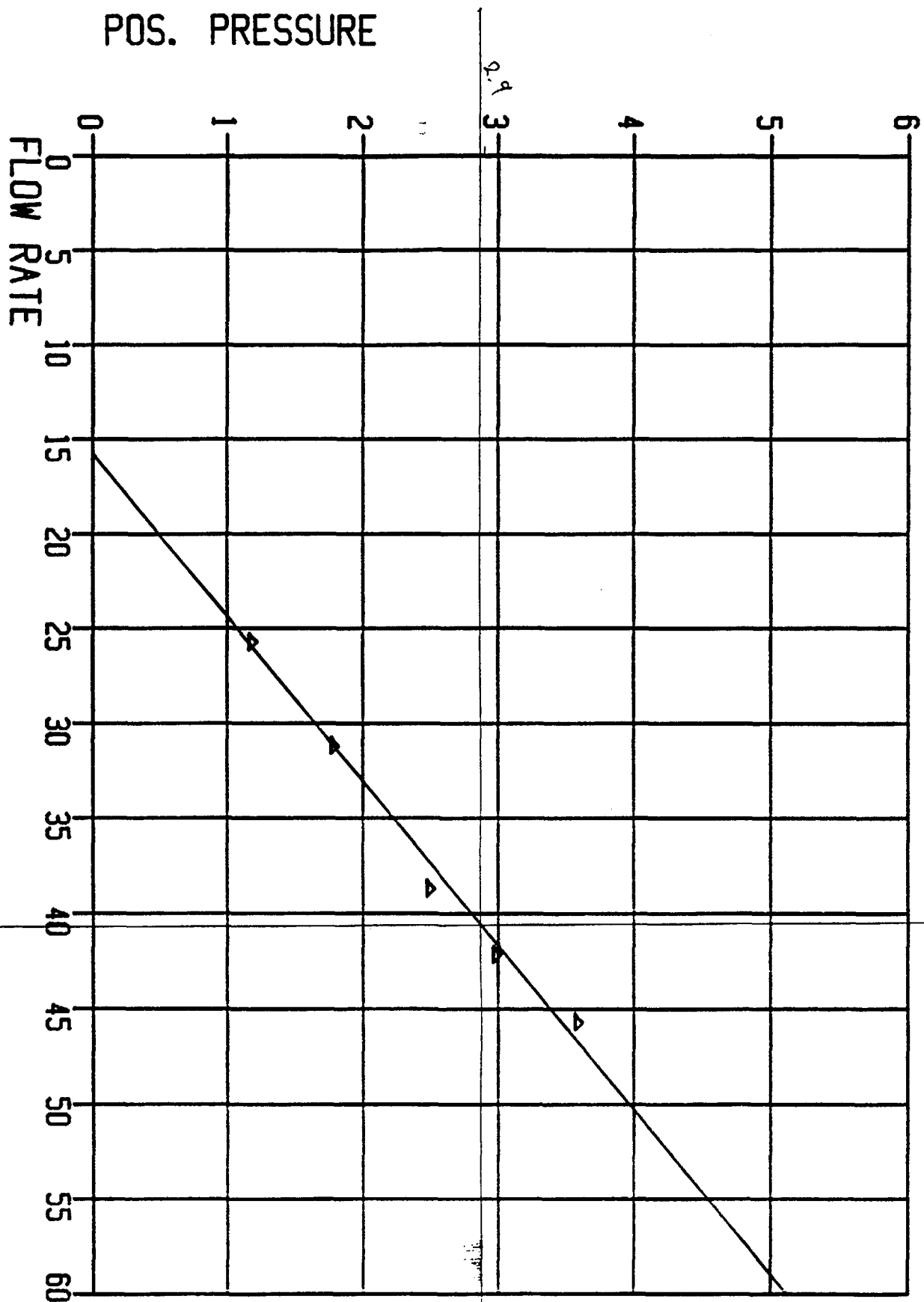
POS. PRESSURE



43

Ref

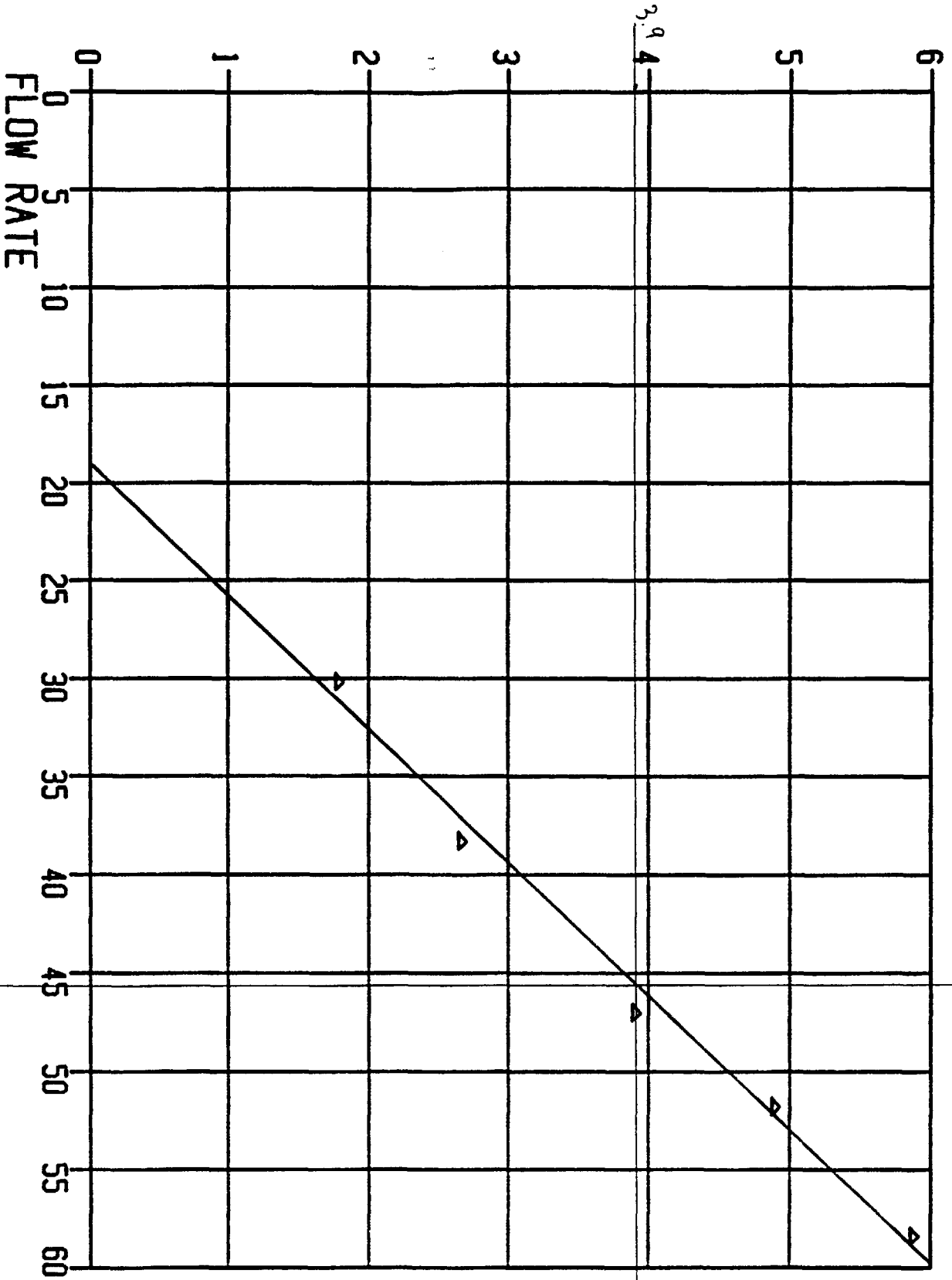
AM 05 DAY 3



*Handwritten signature*

AM 01 DAY 4

POS. PRESSURE

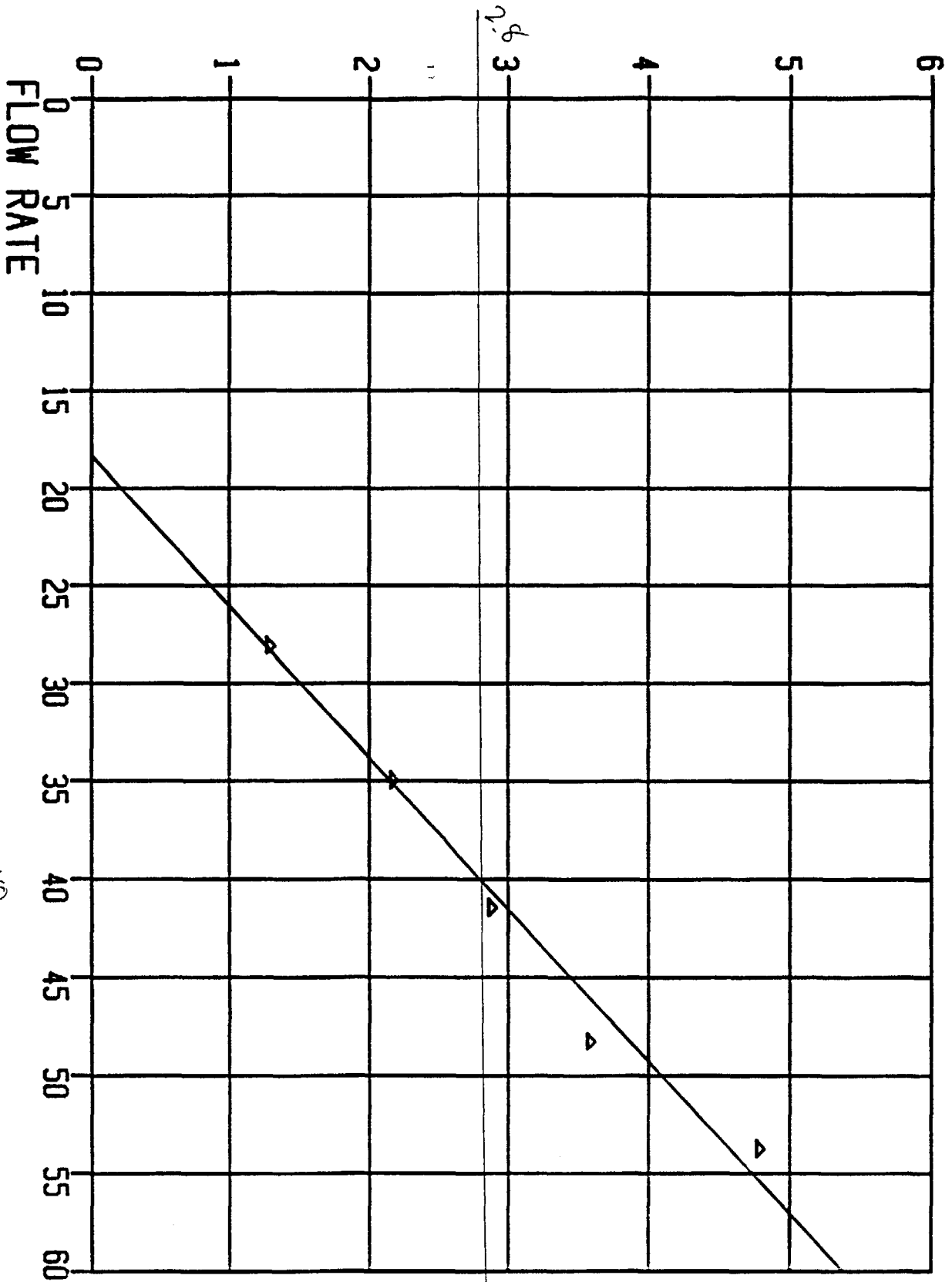


45.5

*Handwritten signature*

AM 02 DAY 4

POS. PRESSURE

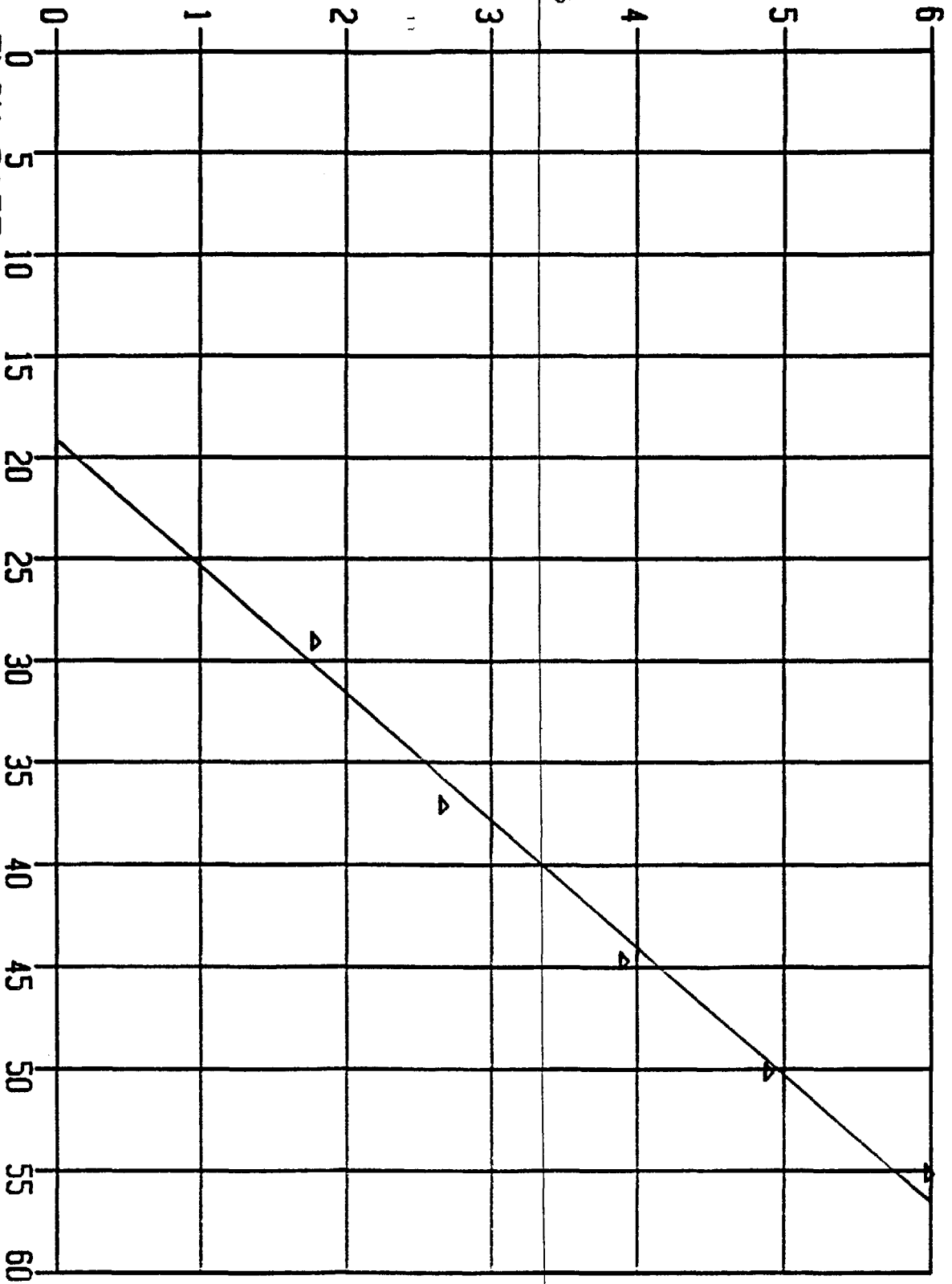


Ref 2

AM 03 DAY 4

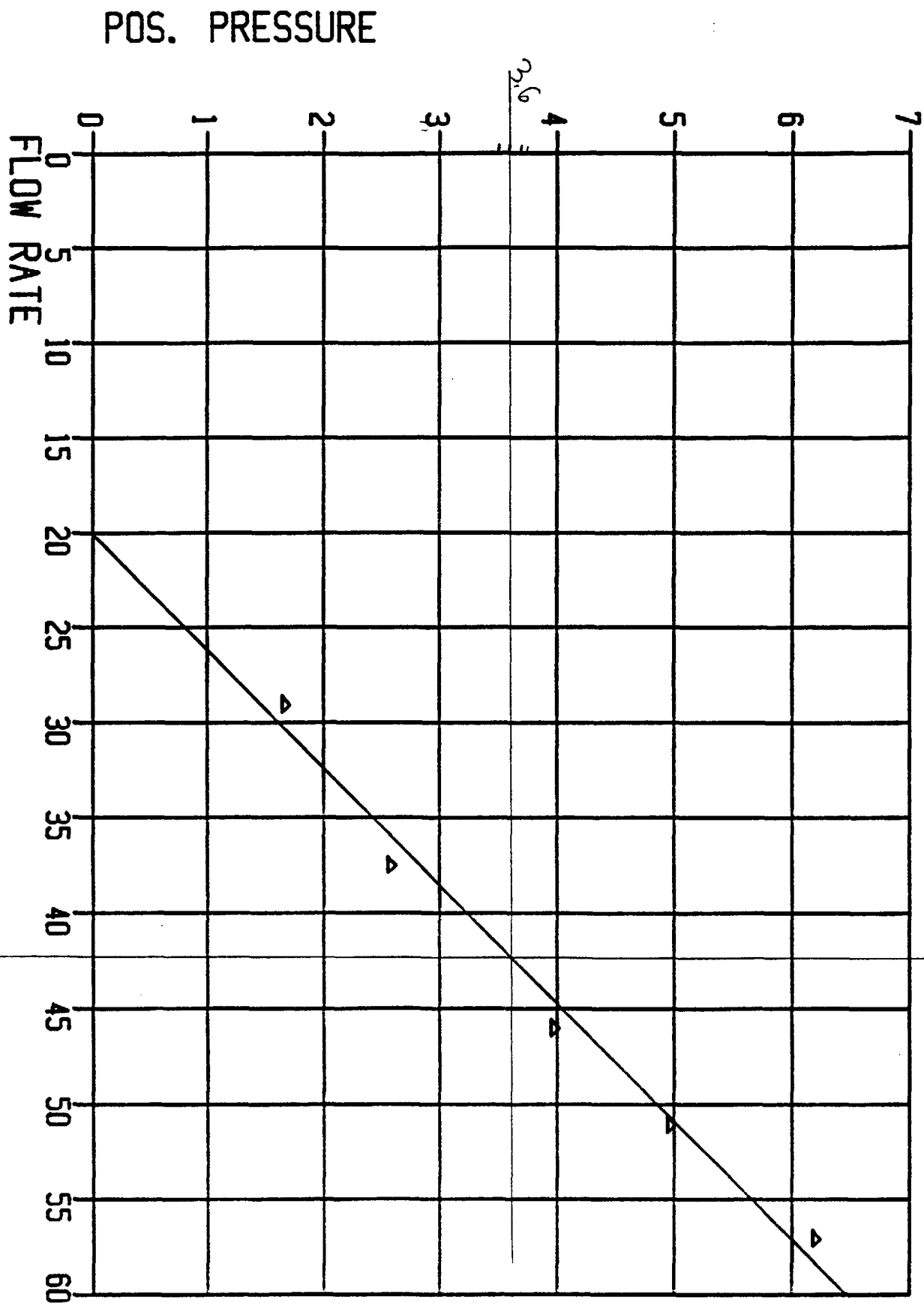
POS. PRESSURE

FLOW RATE



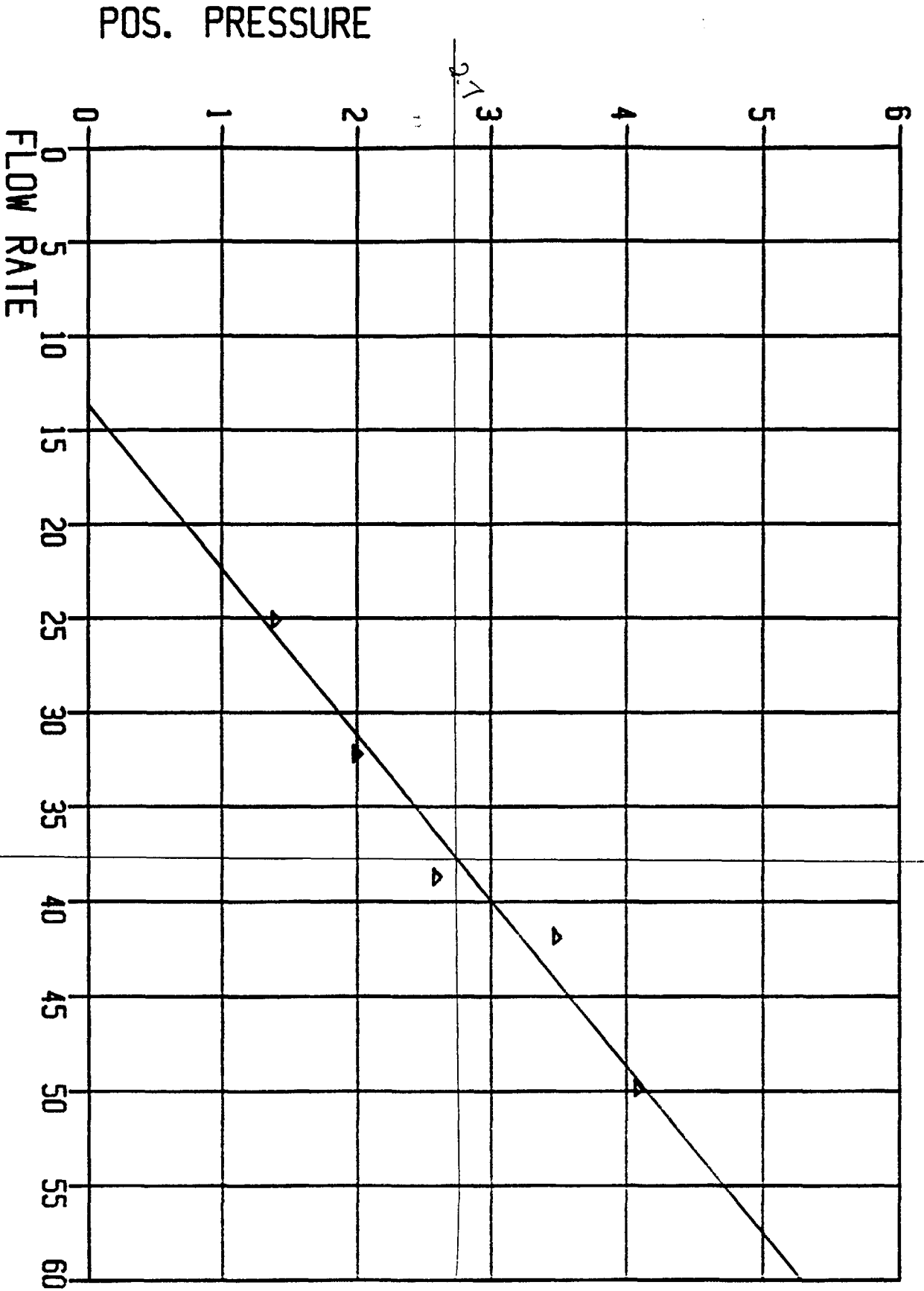
*Ret.*

AM 04 DAY 4



Ref 2

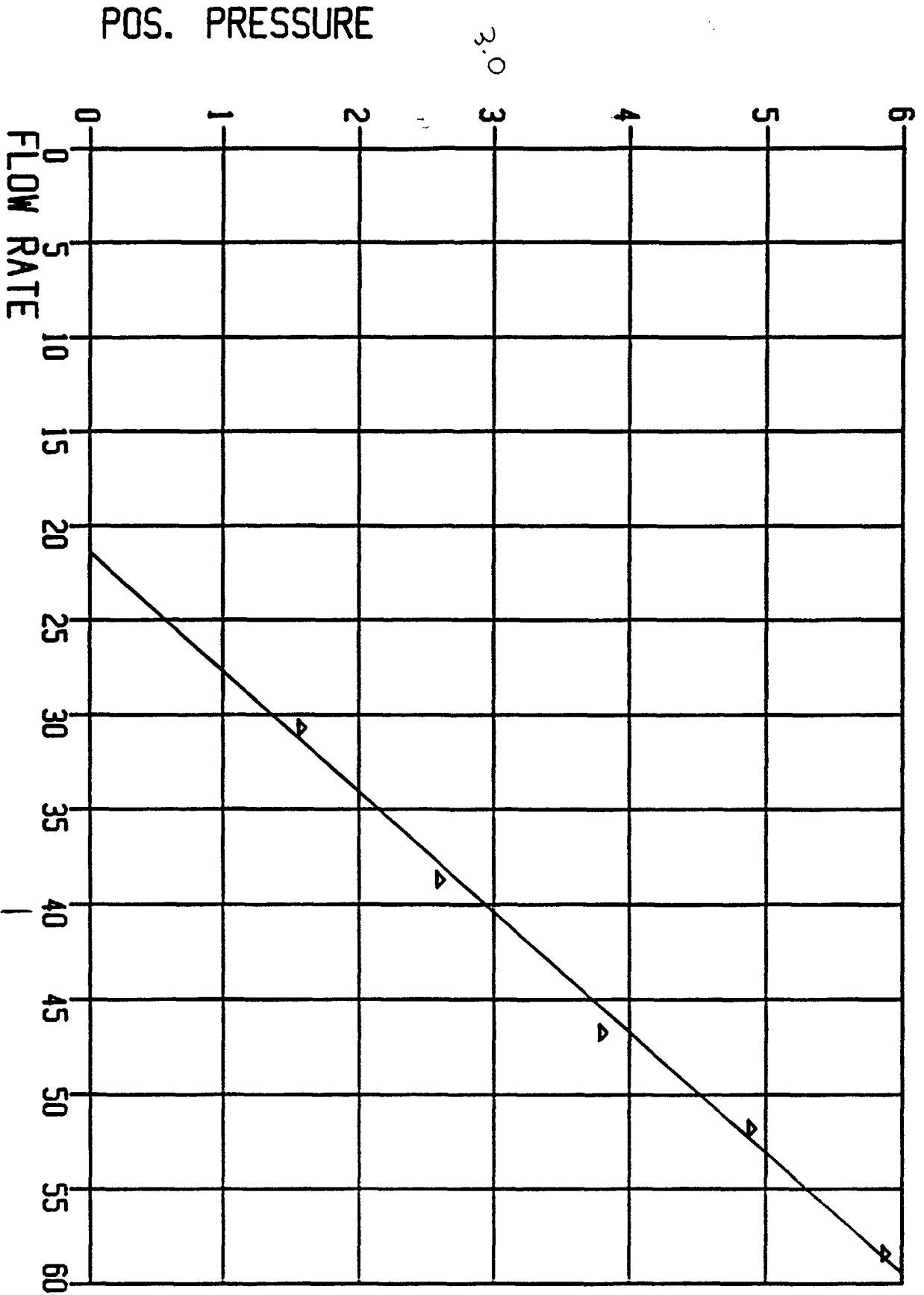
AM 05 DAY 4



37.5

37.5

AM 01 DAY 5



40.5

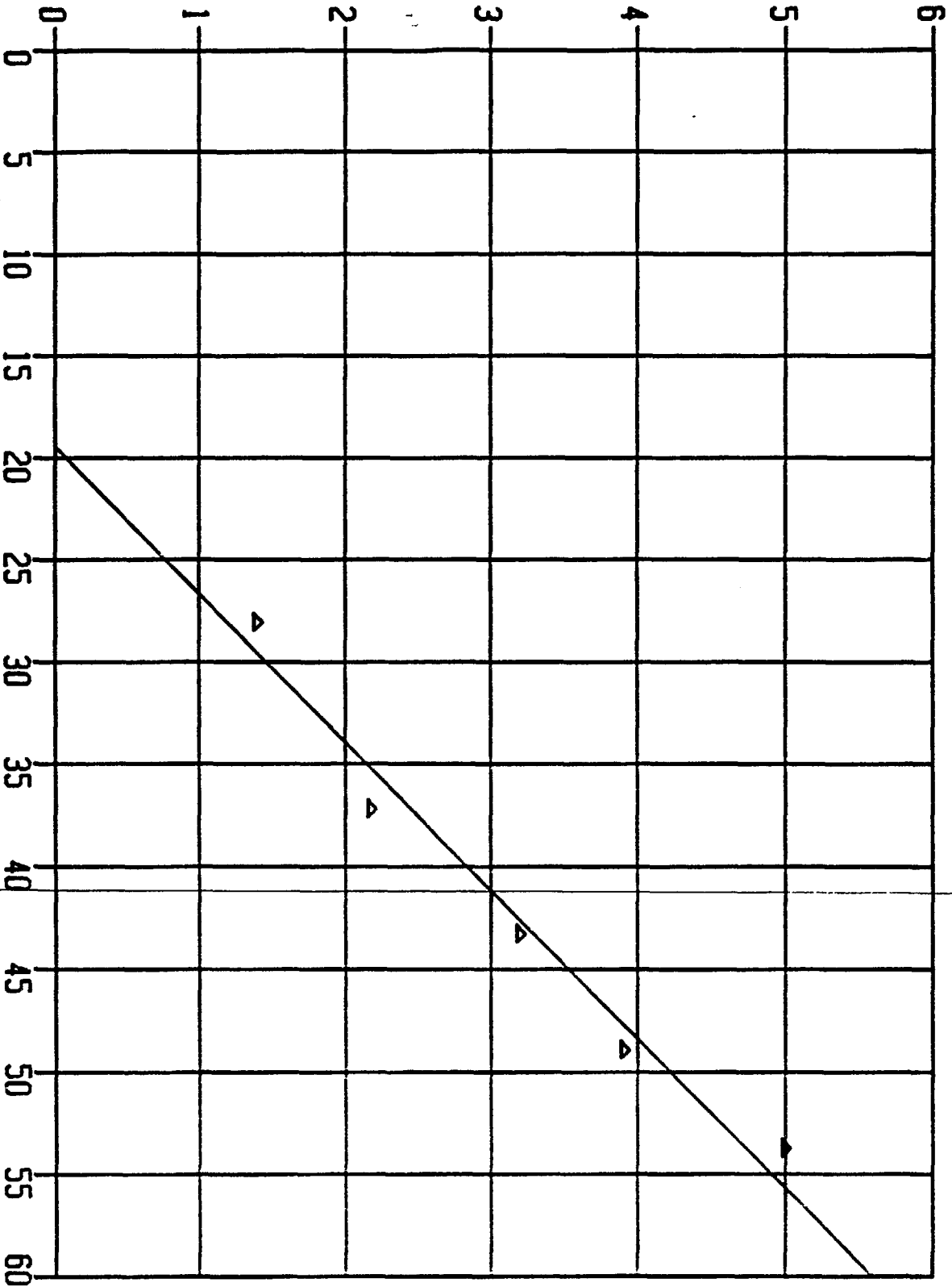
2.2



AM 02 DAY 5

POS. PRESSURE

FLOW RATE

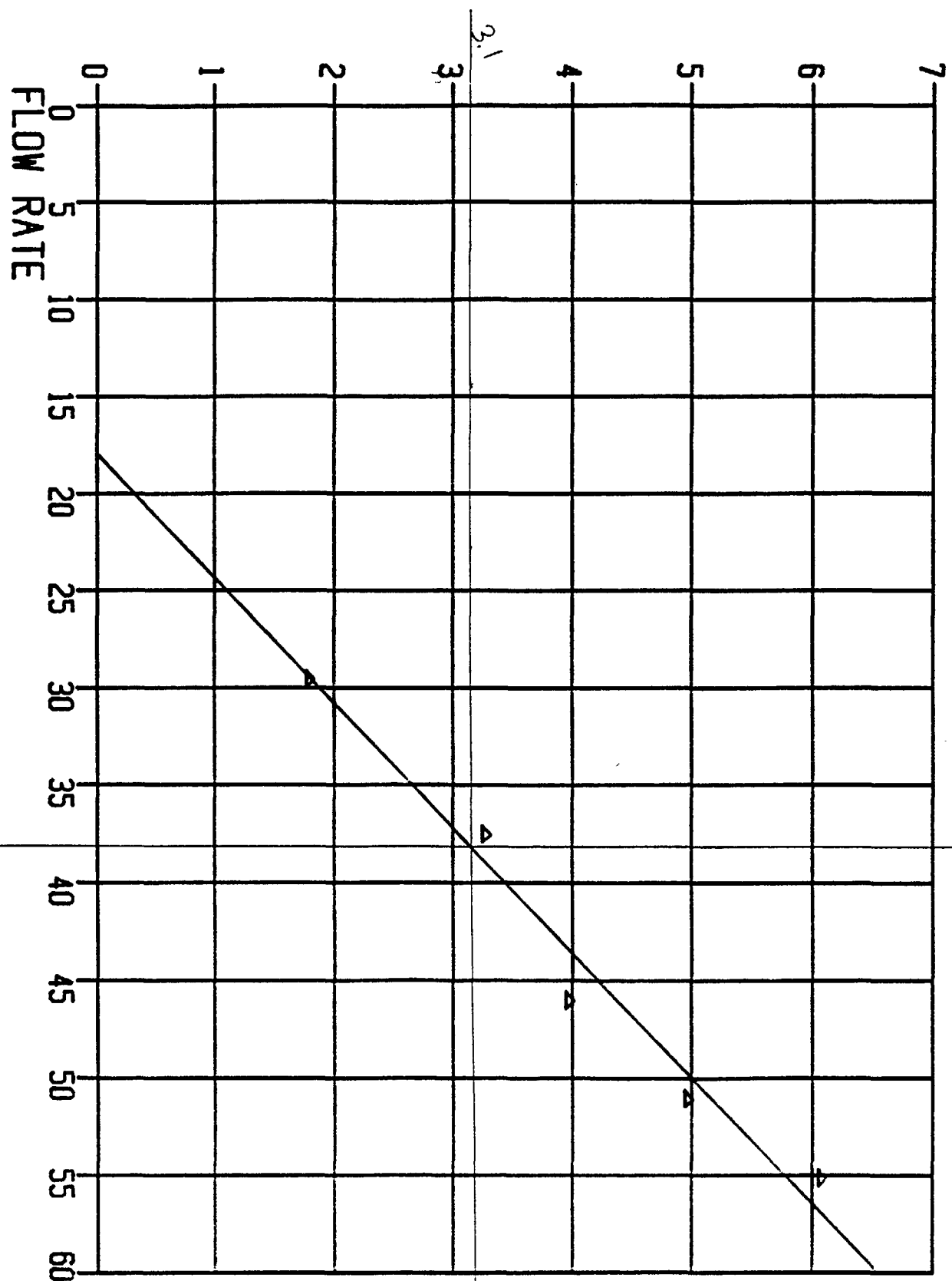


411

Ref 2

AM 03 DAY 5

POS. PRESSURE

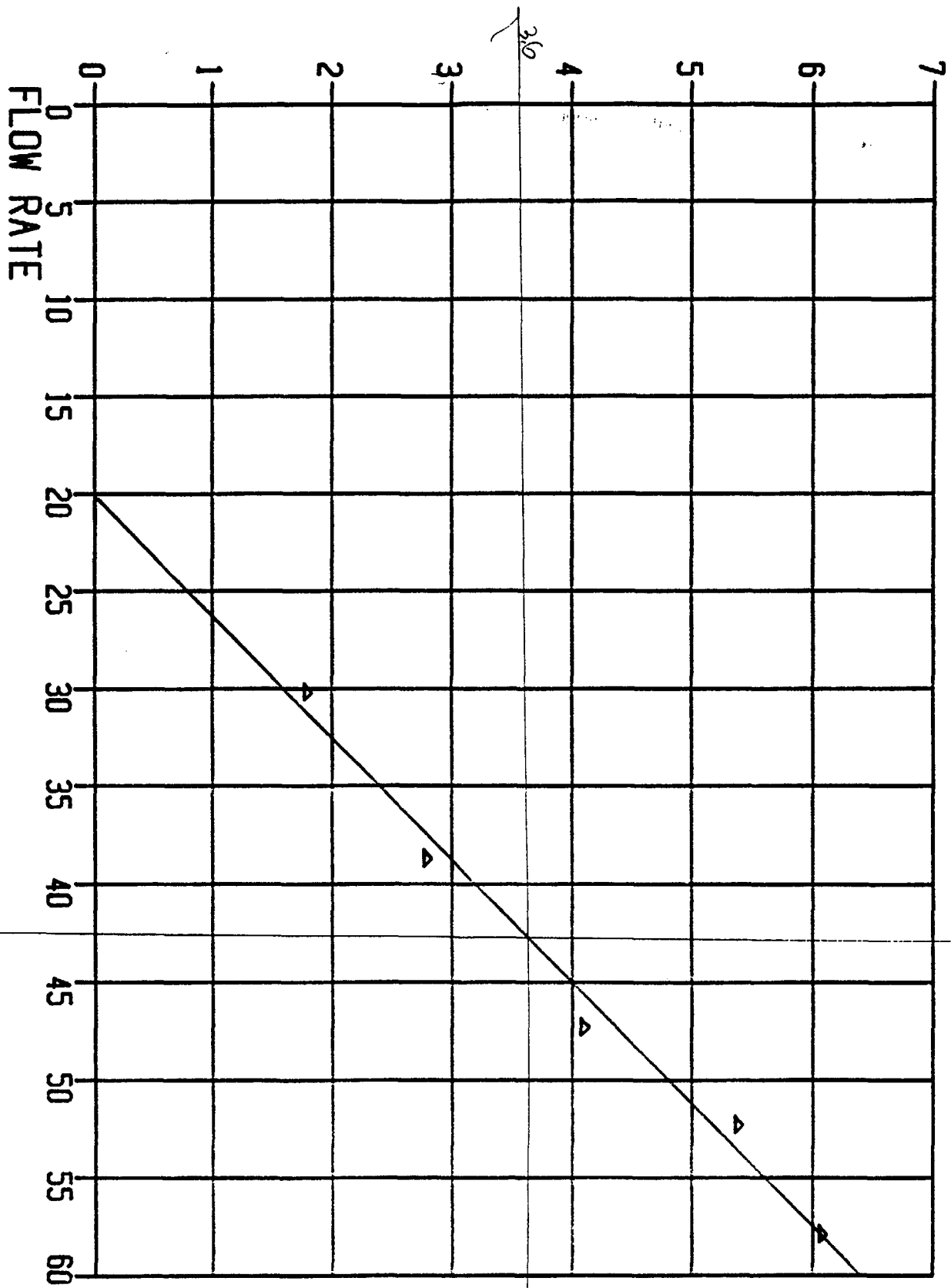


30

Ref 2

POS. PRESSURE

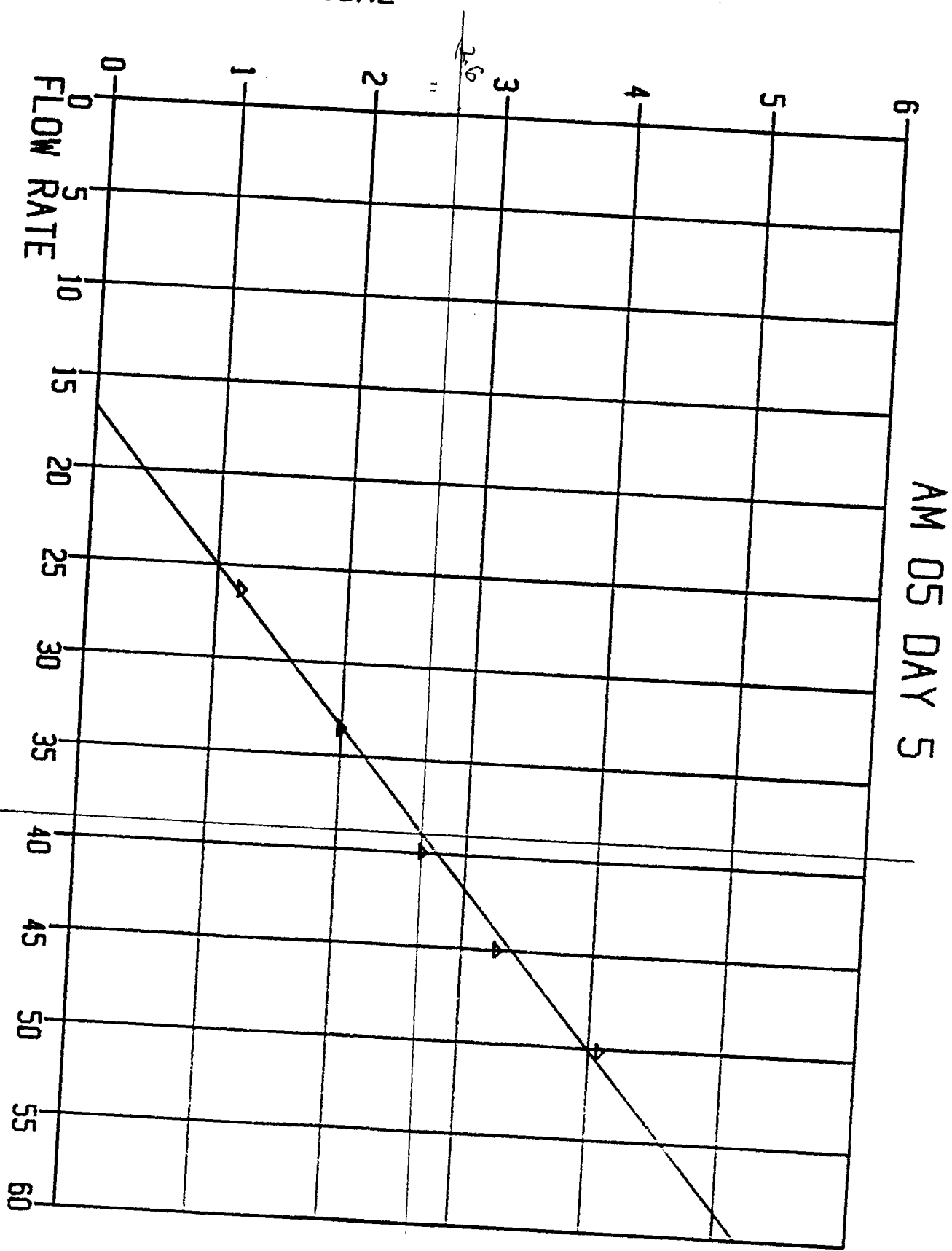
AM 04 DAY 5



42.5

Boyd

POS. PRESSURE




39

Ref 2

Ref 2

APPENDIX IV  
UPDATED SITE INVESTIGATION FORMS

|    |  | <b>POTENTIAL HAZARDOUS WASTE SITE<br/>SITE INSPECTION REPORT</b><br><b>PART 1 - SITE LOCATION AND INSPECTION INFORMATION</b>   |  |   |   | <b>I. IDENTIFICATION</b><br>01 STATE <b>UT</b> 02 SITE NUMBER <b>D980952840</b> |                              |
|---|--|--|--|---|---|---|------------------------------|
| <b>II. SITE NAME AND LOCATION</b>   |  |  |  |   |   |   |                              |
| 01 SITE NAME (Legal, common, or descriptive name of site)<br><b>Richardson Flat Tailings</b>  |  |  |  | 02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER<br><b>approx. 2.5 miles NE of Park City, Utah</b> |   |   |                              |
| 03 CITY<br><b>Park City</b>   |  |  |  | 04 STATE<br><b>UT</b>   | 05 ZIP CODE<br><b>84060</b>                   | 06 COUNTY<br><b>Summit</b>  | 07 COUNTY CODE<br><b>043</b> |
| 08 CONG DIST<br><b>UT-03</b>  |  |  |  |   |   |   |                              |
| 09 COORDINATES<br>LATITUDE <b>40° 40' 50"</b><br>LONGITUDE <b>111° 26' 40"</b>  |  | 10 TYPE OF OWNERSHIP (Check one)<br><input checked="" type="checkbox"/> A. PRIVATE <input type="checkbox"/> B. FEDERAL <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL<br><input type="checkbox"/> F. OTHER |  |   |   |   |                              |
| <b>III. INSPECTION INFORMATION</b>  |  |  |  |   |   |   |                              |
| 01 DATE OF INSPECTION<br><b>6, 19, 85</b><br>MONTH DAY YEAR   |  | 02 SITE STATUS<br><input type="checkbox"/> ACTIVE<br><input checked="" type="checkbox"/> INACTIVE  |  | 03 YEARS OF OPERATION<br>late <b>1960's</b>   <b>1981</b> UNKNOWN<br>BEGINNING YEAR    ENDING YEAR      |   |   |                              |
| 04 AGENCY PERFORMING INSPECTION (Check all that apply) <b>E&amp;E</b><br><input type="checkbox"/> A. EPA <input checked="" type="checkbox"/> B. EPA CONTRACTOR <b>Ecology &amp; Environment Inc.</b> <input type="checkbox"/> C. MUNICIPAL <input type="checkbox"/> D. MUNICIPAL CONTRACTOR<br><input type="checkbox"/> E. STATE <input type="checkbox"/> F. STATE CONTRACTOR <input type="checkbox"/> G. OTHER |  |  |  |   |   |   |                              |
| 05 CHIEF INSPECTOR<br><b>Susan Kennedy</b>  |  | 06 TITLE<br><b>Terrestrial Biologist</b>   |  | 07 ORGANIZATION<br><b>E&amp;E</b>   |   | 08 TELEPHONE NO.<br><b>303 757-4984</b>   |                              |
| 09 OTHER INSPECTORS<br><b>Eric Johnson</b>  |  | 10 TITLE<br><b>EPA Reg. Site Project Officer</b>   |  | 11 ORGANIZATION<br><b>EPA</b>   |   | 12 TELEPHONE NO.<br><b>303 293-1519</b>   |                              |
| <b>Jeff Holcomb</b>   |  | <b>Chemical Engineer</b>   |  | <b>E&amp;E</b>  |   | <b>303 757-4984</b>   |                              |
| <b>Tom Smith</b>  |  | <b>Safety Officer</b>  |  | <b>E&amp;E</b>  |   | <b>303 757-4984</b>   |                              |
| <b>Wade Hansen</b>  |  | <b>Geologist</b>   |  | <b>Utah Dept. Env. Health</b>   |   | <b>801 533-4145</b>   |                              |
| <b>Rob Smith</b>  |  | <b>Chief Hydrogeologist</b>  |  | <b>E&amp;E</b>  |   | <b>303 757-4984</b>   |                              |
| <b>Dave Tuesday</b>   |  | <b>Geochemist</b>  |  | <b>E&amp;E</b>  |   | <b>303 757-4984</b>   |                              |
| 13 SITE REPRESENTATIVES INTERVIEWED<br><b>E.L. Osika, Jr.</b>   |  | 14 TITLE<br><b>Vice President</b>  |  | 15 ADDRESS <b>United Park City Mines</b><br><b>309 Kearns Bldg.</b><br><b>Salt Lake City, UT</b>        |   | 16 TELEPHONE NO.<br><b>801 532-4031</b>   |                              |
| <b>Kerry C. Gee</b>   |  | <b>Geologist/Engineer</b>  |  | <b>same as above</b>  |   | <b>801 532-4031</b>   |                              |
|   |  |  |  |   |   | ( )   |                              |
|   |  |  |  |   |   | ( )   |                              |
|   |  |  |  |   |   | ( )   |                              |
|   |  |  |  |   |   | ( )   |                              |
|   |  |  |  |   |   | ( )   |                              |
| 17 ACCESS GAINED BY (Check one)<br><input checked="" type="checkbox"/> PERMISSION<br><input type="checkbox"/> WARRANT   |  | 18 TIME OF INSPECTION  |  | 19 WEATHER CONDITIONS<br><b>varied</b>  |   |   |                              |
| <b>IV. INFORMATION AVAILABLE FROM</b>   |  |  |  |   |   |   |                              |
| 01 CONTACT<br><b>Paula Schmitttdiel</b>   |  | 02 OF (Agency/Organization)<br><b>EPA - Region VIII Denver</b>   |  |   |   | 03 TELEPHONE NO.<br><b>303 293-1518</b>   |                              |
| 04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM<br><b>Susan Kennedy</b>  |  | 05 AGENCY<br><b>EPA</b>  | 06 ORGANIZATION<br><b>E&amp;E FIT VIII</b> | 07 TELEPHONE NO.<br><b>(303) 757-4984</b>   | 08 DATE<br><b>8, 27, 85</b><br>MONTH DAY YEAR |   |                              |



POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
UT D980952840

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

|   |   |  |
|---|---|--|
| 01 PHYSICAL STATES (Check all that apply)<br><input checked="" type="checkbox"/> A. SOLID<br><input checked="" type="checkbox"/> B. POWDER, FINES<br><input type="checkbox"/> C. SLUDGE<br><input type="checkbox"/> D. OTHER _____<br>(Specify) | 02 WASTE QUANTITY AT SITE<br>(Measure of waste quantities must be independent)<br>TONS <u>2 million</u> <sup>1</sup><br>CUBIC YARDS _____<br>NO. OF DRUMS _____ | 03 WASTE CHARACTERISTICS (Check all that apply)<br><input checked="" type="checkbox"/> A. TOXIC<br><input type="checkbox"/> B. CORROSIVE<br><input type="checkbox"/> C. RADIOACTIVE<br><input checked="" type="checkbox"/> D. PERSISTENT<br><input checked="" type="checkbox"/> E. SOLUBLE<br><input type="checkbox"/> F. INFECTIOUS<br><input type="checkbox"/> G. FLAMMABLE<br><input type="checkbox"/> H. IGNITABLE<br><input type="checkbox"/> I. HIGHLY VOLATILE<br><input type="checkbox"/> J. EXPLOSIVE<br><input type="checkbox"/> K. REACTIVE<br><input type="checkbox"/> L. INCOMPATIBLE<br><input type="checkbox"/> M. NOT APPLICABLE |
|---|---|--|

III. WASTE TYPE

| CATEGORY | SUBSTANCE NAME          | 01 GROSS AMOUNT   | 02 UNIT OF MEASURE | 03 COMMENTS |
|----------|-------------------------|---|--------------------|-------------|
| SLU      | SLUDGE                  |   |                    |             |
| OLW      | OILY WASTE              |   |                    |             |
| SOL      | SOLVENTS                |   |                    |             |
| PSD      | PESTICIDES              |   |                    |             |
| OCC      | OTHER ORGANIC CHEMICALS |   |                    |             |
| IOC      | INORGANIC CHEMICALS     | Elevated arsenic, sodium, cyanide. <sup>2</sup>                         |                    |             |
| ACD      | ACIDS                   |   |                    |             |
| BAS      | BASES                   |   |                    |             |
| MES      | HEAVY METALS            | Heavy metals in tailings material, at least 2 million tons of tailings. |                    |             |

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

| 01 CATEGORY | 02 SUBSTANCE NAME | 03 CAS NUMBER | 04 STORAGE/DISPOSAL METHOD | 05 CONCENTRATION | 06 MEASURE OF CONCENTRATION |
|-------------|-------------------|---------------|----------------------------|------------------|-----------------------------|
| IOC         | Arsenic           | 999           | Surface impoundment        | 1650             | ug/g *                      |
| MES         | Cadmium           | 999           | (tailings)                 | 56               | ug/g                        |
| MES         | Copper            | 999           | "                          | 435              | ug/g                        |
| MES         | Lead              | 999           | "                          | 538              | ug/g                        |
| MES         | Manganese         | 999           | "                          | 2280             | ug/g                        |
| MES         | Mercury           | 999           | "                          | 1.24             | ug/g                        |
| MES         | Nickel            | 7440-02-0     | "                          | 23               | ug/g                        |
| MES         | Silver            | 999           | "                          | 21               | ug/g                        |
| IOC         | Sodium            | 999           | "                          | 2998             | ug/g                        |
| MES         | Zinc              | 999           | "                          | 5353             | ug/g                        |
| IOC         | Cyanide           | 999           | "                          | 5.2              | ug/g                        |

\* Concentration figured are averages of 4 surface tailings samples (RT-SO-4,5,6 & 7). Total metals.<sup>2</sup>

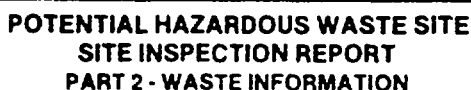
V. FEEDSTOCKS (See Appendix for CAS Numbers)

| CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER | CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER |
|----------|-------------------|---------------|----------|-------------------|---------------|
| FDS      | none              |               | FDS      |                   |               |
| FDS      |                   |               | FDS      |                   |               |
| FDS      |                   |               | FDS      |                   |               |
| FDS      |                   |               | FDS      |                   |               |

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

<sup>1</sup> Memo to File; J. Holcomb; 7/12/85.

<sup>2</sup> Analytical Results Report for Richardson Flat Tailings; Ecology and Environment, Inc. (E&E); 10/25/85; TDD R8-8508-07.



|          |                |
|----------|----------------|
| 01 STATE | 02 SITE NUMBER |
| UT       | D980952840     |

|  |   |   |
|--|---|---|
| 01 PHYSICAL STATES (Check all that apply)  | 02 WASTE QUANTITY AT SITE<br>(Measures of waste quantities must be independent)   | 03 WASTE CHARACTERISTICS (Check all that apply)   |
| <input type="checkbox"/> A SOLID<br><input type="checkbox"/> B POWDER, FINES<br><input type="checkbox"/> C SLUDGE<br><input type="checkbox"/> D OTHER _____<br>(Specify) | <input type="checkbox"/> E SLURRY<br><input type="checkbox"/> F LIQUID<br><input type="checkbox"/> G GAS<br><br>TONS _____<br><br>CUBIC YARDS _____<br><br>NO. OF DRUMS _____ | <input type="checkbox"/> A TOXIC<br><input type="checkbox"/> B CORROSIVE<br><input type="checkbox"/> C RADIOACTIVE<br><input type="checkbox"/> D PERSISTENT<br><br><input type="checkbox"/> E SOLUBLE<br><input type="checkbox"/> F INFECTIOUS<br><input type="checkbox"/> G FLAMMABLE<br><input type="checkbox"/> H IGNITABLE<br><br><input type="checkbox"/> I HIGHLY VOLATILE<br><input type="checkbox"/> J EXPLOSIVE<br><input type="checkbox"/> K REACTIVE<br><input type="checkbox"/> L INCOMPATIBLE<br><input type="checkbox"/> M NOT APPLICABLE |

| CATEGORY | SUBSTANCE NAME          | 01 GROSS AMOUNT | 02 UNIT OF MEASURE | 03 COMMENTS |
|----------|-------------------------|-----------------|--------------------|-------------|
| SLU      | SLUDGE                  |                 |                    |             |
| OLW      | OILY WASTE              |                 |                    |             |
| SOL      | SOLVENTS                |                 |                    |             |
| PSD      | PESTICIDES              |                 |                    |             |
| OCC      | OTHER ORGANIC CHEMICALS |                 |                    |             |
| IOC      | INORGANIC CHEMICALS     |                 |                    |             |
| ACD      | ACIDS                   |                 |                    |             |
| BAS      | BASES                   |                 |                    |             |
| MES      | HEAVY METALS            |                 |                    |             |

[illegible]

| CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER | CATEGORY | 01 FEEDSTOCK NAME | 02 CAS NUMBER |
|----------|-------------------|---------------|----------|-------------------|---------------|
| FDS      |                   |               | FDS      |                   |               |
| FDS      |                   |               | FDS      |                   |               |
| FDS      |                   |               | FDS      |                   |               |
| FDS      |                   |               | FDS      |                   |               |

<sup>3</sup> Analytical Results Report of Air Sampling at Richardson Flat; E&E FIT; 9/19/86; TDD R8-8608-05, E&E Files.





# POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

## PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

### I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
UT D980952840

### II. HAZARDOUS CONDITIONS AND INCIDENTS

|   |  |  |
|---|--|--|
| 01 <input type="checkbox"/> A. GROUNDWATER CONTAMINATION<br>03 POPULATION POTENTIALLY AFFECTED: <u>8</u>  | 02 <input type="checkbox"/> OBSERVED (DATE: <u>8/27/85</u> )<br>04 NARRATIVE DESCRIPTION           | <input type="checkbox"/> POTENTIAL <input checked="" type="checkbox"/> ALLEGED |
| Ground water samples from UPCM wells (RF-GW-2, RF-GW-3) were collected and analyzed. Dissolved metals analyses revealed elevated levels of arsenic, cobalt, iron, manganese, and zinc. Two domestic wells (210' and 222' deep) have been identified within one mile of the site. <sup>4</sup> The best information available indicates the wells are completed in Tertiary volcanic rock composed primarily of andesitic pyroclastics. Weathered water-bearing units of unconsolidated deposits are hydraulically connected to underlying water-bearing unit of Tertiary origin is not known. |  |  |
| 01 <input checked="" type="checkbox"/> B. SURFACE WATER CONTAMINATION<br>03 POPULATION POTENTIALLY AFFECTED: <u>414</u>   | 02 <input type="checkbox"/> OBSERVED (DATE: <u>6/20/85</u> )<br>04 NARRATIVE DESCRIPTION           | <input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED            |
| Surface water samples from Silver Creek, collected downgradient of the site, contained elevated levels of lead. RT-SW-3 (downgradient) contained 1985 ug/l lead as compared to RT-SW-1 (upgradient) containing 147 ug/l lead. Arsenic levels were also elevated. Water diverted from Silver Creek is used for pasture-land irrigation (276 acres) within 3-stream miles of the site. <sup>6,7</sup>   |  |  |
| 01 <input checked="" type="checkbox"/> C. CONTAMINATION OF AIR<br>03 POPULATION POTENTIALLY AFFECTED: <u>4500</u>   | 02 <input checked="" type="checkbox"/> OBSERVED (DATE: <u>7/7/86</u> )<br>04 NARRATIVE DESCRIPTION | <input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED            |
| Hi-volume air sampling performed on July 7-14, 1986 verified the release of inorganic contaminants to the air route. A 100 fold increase in airborne lead concentration was detected when comparing upwind versus downwind sampling stations. Values for arsenic, cadmium and zinc are also highly elevated over the background samples. <sup>3</sup> Population residing within a 4-mile radius is approximately 4500. <sup>8</sup>  |  |  |
| 01 <input type="checkbox"/> D. FIRE/EXPLOSIVE CONDITIONS<br>03 POPULATION POTENTIALLY AFFECTED: <u>0</u>  | 02 <input type="checkbox"/> OBSERVED (DATE: _____)<br>04 NARRATIVE DESCRIPTION                     | <input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED            |
| No recorded history -- fire and explosive conditions do not exist at the site.  |  |  |
| 01 <input type="checkbox"/> E. DIRECT CONTACT<br>03 POPULATION POTENTIALLY AFFECTED: <u>4500</u>  | 02 <input type="checkbox"/> OBSERVED (DATE: _____)<br>04 NARRATIVE DESCRIPTION                     | <input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED |
| The site is not secured from public access or access by domestic livestock. On June 19 and 20, vehicles were observed driving near the tailings area along the access road. Sheep and cattle were observed walking on the tailings on June 19 and 20, 1985.   |  |  |
| 01 <input type="checkbox"/> F. CONTAMINATION OF SOIL<br>03 AREA POTENTIALLY AFFECTED: <u>640</u><br>(Acres)   | 02 <input type="checkbox"/> OBSERVED (DATE: <u>8/27/85</u> )<br>04 NARRATIVE DESCRIPTION           | <input type="checkbox"/> POTENTIAL <input checked="" type="checkbox"/> ALLEGED |
| Soil beneath the the tailings (RF-SS-6) contains elevated concentrations of antimony, arsenic, cadmium, copper, lead, magnesium, mercury, silver, sodium and zinc. Off site surface soil (RT-SO-1) contained elevated levels of arsenic, cadmium, lead, mercury and zinc probably due to wind deposition. <sup>2</sup>  |  |  |
| 01 <input checked="" type="checkbox"/> G. DRINKING WATER CONTAMINATION<br>03 POPULATION POTENTIALLY AFFECTED: <u>8</u>  | 02 <input type="checkbox"/> OBSERVED (DATE: _____)<br>04 NARRATIVE DESCRIPTION                     | <input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED |
| Two domestic wells are located within one mile of the tailings. <sup>4</sup> Surface water from Silver Creek is not used for drinking water. <sup>9</sup>   |  |  |
| 01 <input checked="" type="checkbox"/> H. WORKER EXPOSURE/INJURY<br>03 WORKERS POTENTIALLY AFFECTED: <u>5</u>   | 02 <input type="checkbox"/> OBSERVED (DATE: _____)<br>04 NARRATIVE DESCRIPTION                     | <input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED |
| The tailings are being removed by Mr. Ray Wortley to be used as backfill for sewer lines and road base. In addition, FTT members observed heavy equipment operators dumping what appeared to be native soil on the tailings area. Observations were made on June 19 and 20, 1985.   |  |  |
| 01 <input checked="" type="checkbox"/> I. POPULATION EXPOSURE/INJURY<br>03 POPULATION POTENTIALLY AFFECTED: <u>4500</u>   | 02 <input type="checkbox"/> OBSERVED (DATE: _____)<br>04 NARRATIVE DESCRIPTION                     | <input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED |
| No recorded history of population exposure or injury, however, the site is not secured from public access or domestic livestock grazing. Population exposure of concern include airborne contaminants, food chain contamination associated with the surface water route, and threat to domestic wells.  |  |  |

Ref-2

|  |   |   |  |                |                              |
|--|---|---|--|----------------|------------------------------|
| <b>POTENTIAL HAZARDOUS WASTE SITE<br/>SITE INSPECTION REPORT</b><br><b>PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS</b>  |   | <b>I. IDENTIFICATION</b><br><table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">01 STATE<br/>UT</td> <td style="width: 50%; text-align: center;">02 SITE NUMBER<br/>D980952840</td> </tr> </table> |  | 01 STATE<br>UT | 02 SITE NUMBER<br>D980952840 |
| 01 STATE<br>UT   | 02 SITE NUMBER<br>D980952840  |   |  |                |                              |
| <b>II. HAZARDOUS CONDITIONS AND INCIDENTS</b> <small>(Continued)</small>   |   |   |  |                |                              |
| 01   | <input checked="" type="checkbox"/> J. DAMAGE TO FLORA  | 02 <input checked="" type="checkbox"/> OBSERVED (DATE: 6/19/85 )  | <input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED            |                |                              |
| 04 NARRATIVE DESCRIPTION<br>Peripheral tailings support vegetation including <u>Juncus</u> sp., <u>Salix</u> sp. and <u>Verbascum thapsus</u> , but most of the tailings are denuded due to high levels of soluble salts and metals.   |   |   |  |                |                              |
| 01   | <input checked="" type="checkbox"/> K. DAMAGE TO FAUNA  | 02 <input type="checkbox"/> OBSERVED (DATE: _____)  | <input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED |                |                              |
| 04 NARRATIVE DESCRIPTION <small>(Include names of species)</small><br>No apparent damage to area fauna. Two muskrats were observed swimming in the drainage ditch on site (near RT-SW-4). Fish in Silver Creek could potentially be affected by lead and arsenic released from the tailings.   |   |   |  |                |                              |
| 01   | <input checked="" type="checkbox"/> L. CONTAMINATION OF FOOD CHAIN  | 02 <input type="checkbox"/> OBSERVED (DATE: _____)  | <input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED |                |                              |
| 04 NARRATIVE DESCRIPTION<br>The possibility exists for metals to move through the food chain 1) by domestic livestock grazing in areas where soil is contaminated; 2) by heavy metal concentration in local fish populations.  |   |   |  |                |                              |
| 01   | <input checked="" type="checkbox"/> M. UNSTABLE CONTAINMENT OF WASTES<br><small>(Spills, Runoff, Standing liquids, Leaking drums)</small> | 02 <input type="checkbox"/> OBSERVED (DATE: _____)  | <input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED            |                |                              |
| 03 POPULATION POTENTIALLY AFFECTED: 4500      04 NARRATIVE DESCRIPTION<br>Tailings ponds are uncovered and therefore susceptible to gusty winds which carry fine-grain tailings material off-site. A dam constructed at the northwest end of the tailings prevents mass movement of solid material off-site.                               |   |   |  |                |                              |
| 01   | <input checked="" type="checkbox"/> N. DAMAGE TO OFFSITE PROPERTY   | 02 <input type="checkbox"/> OBSERVED (DATE: _____)  | <input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED |                |                              |
| 04 NARRATIVE DESCRIPTION<br>The potential exists for damage to off-site property because the tailings material is allegedly being used as sewer line backfill and road base in the Park City area.   |   |   |  |                |                              |
| 01   | <input checked="" type="checkbox"/> O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs   | 02 <input type="checkbox"/> OBSERVED (DATE: _____)  | <input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED |                |                              |
| 04 NARRATIVE DESCRIPTION<br>If tailings material is being used as sewer line backfill, the potential exists for sewer contamination by metals.   |   |   |  |                |                              |
| 01   | <input type="checkbox"/> P. ILLEGAL/UNAUTHORIZED DUMPING  | 02 <input type="checkbox"/> OBSERVED (DATE: _____)  | <input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED            |                |                              |
| 04 NARRATIVE DESCRIPTION<br>Dumping of native soil on to the tailings was observed by FIT members, but is under the supervision of United Park City Mines.   |   |   |  |                |                              |
| 05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS<br><br>No other hazards are known.  |   |   |  |                |                              |
| III. TOTAL POPULATION POTENTIALLY AFFECTED: 4500   |   |   |  |                |                              |
| <b>IV. COMMENTS</b>  |   |   |  |                |                              |
|  |   |   |  |                |                              |
| <b>V. SOURCES OF INFORMATION</b> <small>(Cite specific references, e. g., state files, sample analysis, reports)</small>   |   |   |  |                |                              |
| 4 Well Logs (#34833 and #A-34356).<br>5 Water Resources of the Heber-Kamas - Park City Area North-Central Utah; Tech. Publ. No. 27.<br>6 Telecon; S. Kennedy to J. Anderson; 7/18/85.<br>7 Weber River Decree and Corresponding Plat.<br><br>8 Telecon; S. Kennedy to J. Harrington; 9/4/85.<br>9 Telecon; S. Kennedy to L. Mize; 7/17/85. |   |   |  |                |                              |

Ret 2

|  |  |   |  |                |                              |  |
|--|--|---|--|----------------|------------------------------|--|
|  |  | <b>POTENTIAL HAZARDOUS WASTE SITE<br/>SITE INSPECTION</b> |  |                | <b>I. IDENTIFICATION</b>     |  |
|  |  | <b>PART 4 - PERMIT AND DESCRIPTIVE INFORMATION</b>        |  | 01 STATE<br>UT | 02 SITE NUMBER<br>D980952840 |  |

|   |                  |                |                    |             |  |
|---|------------------|----------------|--------------------|-------------|--|
| <b>II. PERMIT INFORMATION</b>                                     |                  |                |                    |             |  |
| 01 TYPE OF PERMIT ISSUED<br><small>(Check all that apply)</small> | 02 PERMIT NUMBER | 03 DATE ISSUED | 04 EXPIRATION DATE | 05 COMMENTS |  |
| <input type="checkbox"/> A. NPDES                                 |                  |                |                    |             |  |
| <input type="checkbox"/> B. UIC                                   |                  |                |                    |             |  |
| <input type="checkbox"/> C. AIR                                   |                  |                |                    |             |  |
| <input type="checkbox"/> D. RCRA                                  |                  |                |                    |             |  |
| <input type="checkbox"/> E. RCRA INTERIM STATUS                   |                  |                |                    |             |  |
| <input type="checkbox"/> F. SPCC PLAN                             |                  |                |                    |             |  |
| <input type="checkbox"/> G. STATE <small>(Specify)</small>        |                  |                |                    |             |  |
| <input type="checkbox"/> H. LOCAL <small>(Specify)</small>        |                  |                |                    |             |  |
| <input type="checkbox"/> I. OTHER <small>(Specify)</small>        |                  |                |                    |             |  |
| <input checked="" type="checkbox"/> J. NONE                       |                  |                |                    |             |  |

|   |                  |                    |  |   |
|---|------------------|--------------------|--|---|
| <b>III. SITE DESCRIPTION</b>  |                  |                    |  |   |
| 01 STORAGE/DISPOSAL <small>(Check all that apply)</small>   | 02 AMOUNT        | 03 UNIT OF MEASURE | 04 TREATMENT <small>(Check all that apply)</small>   | 05 OTHER  |
| <input checked="" type="checkbox"/> A. SURFACE IMPOUNDMENT<br><input type="checkbox"/> B. PILES<br><input type="checkbox"/> C. DRUMS, ABOVE GROUND<br><input type="checkbox"/> D. TANK, ABOVE GROUND<br><input type="checkbox"/> E. TANK, BELOW GROUND<br><input type="checkbox"/> F. LANDFILL<br><input type="checkbox"/> G. LANDFARM<br><input type="checkbox"/> H. OPEN DUMP<br><input type="checkbox"/> I. OTHER <small>(Specify)</small> | <u>2 million</u> | <u>tons</u>        | <input type="checkbox"/> A. INCENERATION<br><input type="checkbox"/> B. UNDERGROUND INJECTION<br><input type="checkbox"/> C. CHEMICAL/PHYSICAL<br><input type="checkbox"/> D. BIOLOGICAL<br><input type="checkbox"/> E. WASTE OIL PROCESSING<br><input type="checkbox"/> F. SOLVENT RECOVERY<br><input type="checkbox"/> G. OTHER RECYCLING/RECOVERY<br><input type="checkbox"/> H. OTHER <small>(Specify)</small> | <input type="checkbox"/> A. BUILDINGS ON SITE<br><br>None |
|   |                  |                    |  | 06 AREA OF SITE<br><br><u>160</u> (Acres)                 |

07 COMMENTS  
 Slurry, generated from milling activities, was piped to the Richardson Flat area and currently covers approximately 160 acres. The metal sulfide, and carbonate-containing tailings material is presently a solid matrix. An ephemeral pond overlies a portion of the tailings.

|   |  |
|---|--|
| <b>IV. CONTAINMENT</b>  |  |
| 01 CONTAINMENT OF WASTES <small>(Check one)</small><br><input type="checkbox"/> A. ADEQUATE, SECURE <input type="checkbox"/> B. MODERATE <input checked="" type="checkbox"/> C. INADEQUATE, POOR <input type="checkbox"/> D. INSECURE, UNSOUND, DANGEROUS |  |
| 02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.<br>A dam at the northwest extension of the tailings is the only form of artificial containment on site. The tailings material is uncovered, and no underlying liner is present.                   |  |

|   |  |
|---|--|
| <b>V. ACCESSIBILITY</b>   |  |
| 01 WASTE EASILY ACCESSIBLE: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO<br>02 COMMENTS<br>The site is not secured from public access or domestic livestock grazing. |  |

|   |
|---|
| <b>VI. SOURCES OF INFORMATION</b> <small>(Cite specific references, e.g. state files, sample analysis, reports)</small> |
| See pages 2, 2A and 4.  |


Ref 2

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| <b>POTENTIAL HAZARDOUS WASTE SITE<br/>SITE INSPECTION REPORT</b><br><b>PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA</b>  |   |  |  | <b>I. IDENTIFICATION</b><br>01 STATE <b>UT</b> 02 SITE NUMBER <b>D980952840</b>                      |  |       |          |                  |                     |                                     |                          |                      |                          |                          |       |                          |            |
|---|---|--|--|--|--|-------|----------|------------------|---------------------|-------------------------------------|--------------------------|----------------------|--------------------------|--------------------------|-------|--------------------------|------------|
| <b>II. DRINKING WATER SUPPLY</b>  |   |  |  |  |  |       |          |                  |                     |                                     |                          |                      |                          |                          |       |                          |            |
| <b>01 TYPE OF DRINKING SUPPLY</b><br><small>(Check as applicable)</small><br><br><div style="display: flex; justify-content: space-between;"> <div> <b>SURFACE</b><br/>           COMMUNITY    A. <input type="checkbox"/><br/>           NON-COMMUNITY    C. <input type="checkbox"/> </div> <div> <b>WELL</b><br/>           B. <input type="checkbox"/><br/>           D. <input checked="" type="checkbox"/> </div> </div>  |   | <b>02 STATUS</b><br><br><div style="display: flex; justify-content: space-between;"> <div> <b>ENDANGERED</b><br/>           A. <input checked="" type="checkbox"/><br/>           D. <input type="checkbox"/> </div> <div> <b>AFFECTED</b><br/>           B. <input type="checkbox"/><br/>           E. <input type="checkbox"/> </div> <div> <b>MONITORED</b><br/>           C. <input type="checkbox"/><br/>           F. <input type="checkbox"/> </div> </div> |  | <b>03 DISTANCE TO SITE</b><br><br>A. <u>3/4</u> (mi)<br>B. _____ (mi)                                |  |       |          |                  |                     |                                     |                          |                      |                          |                          |       |                          |            |
| <b>III. GROUNDWATER</b>   |   |  |  |  |  |       |          |                  |                     |                                     |                          |                      |                          |                          |       |                          |            |
| <b>01 GROUNDWATER USE IN VICINITY</b> <small>(Check one)</small><br><div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> A. ONLY SOURCE FOR DRINKING<br/> <input checked="" type="checkbox"/> B. DRINKING<br/> <small>(Other sources available)</small><br/>           COMMERCIAL, INDUSTRIAL, IRRIGATION<br/> <small>(No other water sources available)</small> </div> <div> <input type="checkbox"/> C. COMMERCIAL, INDUSTRIAL, IRRIGATION<br/> <small>(Limited other sources available)</small><br/> <input type="checkbox"/> D. NOT USED, UNUSEABLE         </div> </div>  |   |  |  |  |  |       |          |                  |                     |                                     |                          |                      |                          |                          |       |                          |            |
| <b>02 POPULATION SERVED BY GROUND WATER</b> <u>8</u>  |   | <b>03 DISTANCE TO NEAREST DRINKING WATER WELL</b> <u>3/4</u> (mi)  |  |  |  |       |          |                  |                     |                                     |                          |                      |                          |                          |       |                          |            |
| <b>04 DEPTH TO GROUNDWATER</b><br><u>50<sup>4</sup></u> (ft)  | <b>05 DIRECTION OF GROUNDWATER FLOW</b><br><u>north</u> | <b>06 DEPTH TO AQUIFER OF CONCERN</b><br><u>50</u> (ft)  | <b>07 POTENTIAL YIELD OF AQUIFER</b><br><u>unknown</u> (gpd)       | <b>08 SOLE SOURCE AQUIFER</b><br><input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |  |       |          |                  |                     |                                     |                          |                      |                          |                          |       |                          |            |
| <b>09 DESCRIPTION OF WELLS</b> <small>(including usage, depth, and location relative to population and buildings)</small><br>According to State records, two private domestic wells are located approximately 4000 feet southwest of the site. One of the wells is 210 feet deep with a static water level of 42 feet. The second well is 222 feet deep with a static water level of 55 feet.   |   |  |  |  |  |       |          |                  |                     |                                     |                          |                      |                          |                          |       |                          |            |
| <b>10 RECHARGE AREA</b><br><input checked="" type="checkbox"/> YES <input type="checkbox"/> NO    COMMENTS: _____   |   | <b>11 DISCHARGE AREA</b><br><input type="checkbox"/> YES <input checked="" type="checkbox"/> NO    COMMENTS: _____   |  |  |  |       |          |                  |                     |                                     |                          |                      |                          |                          |       |                          |            |
| <b>IV. SURFACE WATER</b>  |   |  |  |  |  |       |          |                  |                     |                                     |                          |                      |                          |                          |       |                          |            |
| <b>01 SURFACE WATER USE</b> <small>(Check one)</small><br><div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> A. RESERVOIR, RECREATION DRINKING WATER SOURCE           </div> <div> <input checked="" type="checkbox"/> B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES           </div> <div> <input type="checkbox"/> C. COMMERCIAL, INDUSTRIAL           </div> <div> <input type="checkbox"/> D. NOT CURRENTLY USED           </div> </div>   |   |  |  |  |  |       |          |                  |                     |                                     |                          |                      |                          |                          |       |                          |            |
| <b>02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER</b><br><br><table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">NAME:</th> <th style="width: 20%;">AFFECTED</th> <th style="width: 20%;">DISTANCE TO SITE</th> </tr> </thead> <tbody> <tr> <td><u>Silver Creek</u></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td><u>approx. 300'</u> (mi)</td> </tr> <tr> <td><u>GM Pace Ditch</u></td> <td style="text-align: center;"><input type="checkbox"/></td> <td><u>approx. 400'</u> (mi)</td> </tr> <tr> <td>_____</td> <td style="text-align: center;"><input type="checkbox"/></td> <td>_____ (mi)</td> </tr> </tbody> </table> |   |  |  |  |  | NAME: | AFFECTED | DISTANCE TO SITE | <u>Silver Creek</u> | <input checked="" type="checkbox"/> | <u>approx. 300'</u> (mi) | <u>GM Pace Ditch</u> | <input type="checkbox"/> | <u>approx. 400'</u> (mi) | _____ | <input type="checkbox"/> | _____ (mi) |
| NAME:   | AFFECTED  | DISTANCE TO SITE   |  |  |  |       |          |                  |                     |                                     |                          |                      |                          |                          |       |                          |            |
| <u>Silver Creek</u>   | <input checked="" type="checkbox"/>                     | <u>approx. 300'</u> (mi)   |  |  |  |       |          |                  |                     |                                     |                          |                      |                          |                          |       |                          |            |
| <u>GM Pace Ditch</u>  | <input type="checkbox"/>                                | <u>approx. 400'</u> (mi)   |  |  |  |       |          |                  |                     |                                     |                          |                      |                          |                          |       |                          |            |
| _____   | <input type="checkbox"/>                                | _____ (mi)   |  |  |  |       |          |                  |                     |                                     |                          |                      |                          |                          |       |                          |            |
| <b>V. DEMOGRAPHIC AND PROPERTY INFORMATION</b>  |   |  |  |  |  |       |          |                  |                     |                                     |                          |                      |                          |                          |       |                          |            |
| <b>01 TOTAL POPULATION WITHIN</b><br><div style="display: flex; justify-content: space-between;"> <div> <b>ONE (1) MILE OF SITE</b><br/>           A. <u>0</u><br/> <small>NO. OF PERSONS</small> </div> <div> <b>TWO (2) MILES OF SITE</b><br/>           B. <u>8</u><br/> <small>NO. OF PERSONS</small> </div> <div> <b>THREE (3) MILES OF SITE</b><br/>           C. <u>95</u><br/> <small>NO. OF PERSONS</small> </div> </div> <small>(house count from 1955)</small>   |   |  | <b>02 DISTANCE TO NEAREST POPULATION</b><br><u>1.9</u> (mi)        |  |  |       |          |                  |                     |                                     |                          |                      |                          |                          |       |                          |            |
| <b>03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE</b><br><u>2</u>  |   |  | <b>04 DISTANCE TO NEAREST OFF-SITE BUILDING</b><br><u>1.9</u> (mi) |  |  |       |          |                  |                     |                                     |                          |                      |                          |                          |       |                          |            |
| <b>05 POPULATION WITHIN VICINITY OF SITE</b> <small>(Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)</small><br>Park City, Utah is approximately 2.5 miles southwest of the site. The population fluctuates from 4500 to 10,000 during the winter ski season. The year-round permanent population is approximately 4500.   |   |  |  |  |  |       |          |                  |                     |                                     |                          |                      |                          |                          |       |                          |            |

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|   |  | POTENTIAL HAZARDOUS WASTE SITE<br>SITE INSPECTION REPORT<br>PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA |  | I. IDENTIFICATION  |                |
|--|--|---|--|--|----------------|
|  |  |   |  | 01 STATE   | 02 SITE NUMBER |
|  |  | UT  | D980952840   |  |                |
| VI. ENVIRONMENTAL INFORMATION  |  |   |  |  |                |
| 01 PERMEABILITY OF UNSATURATED ZONE (Check one)  |  |   |  |  |                |
| <input type="checkbox"/> A. $10^{-6} - 10^{-8}$ cm/sec <input type="checkbox"/> B. $10^{-4} - 10^{-6}$ cm/sec <input type="checkbox"/> C. $10^{-4} - 10^{-3}$ cm/sec <input checked="" type="checkbox"/> D. GREATER THAN $10^{-3}$ cm/sec  |  |   |  |  |                |
| 02 PERMEABILITY OF BEDROCK (Check one)   |  |   |  |  |                |
| <input type="checkbox"/> A. IMPERMEABLE<br>(Less than $10^{-6}$ cm/sec) <input checked="" type="checkbox"/> B. RELATIVELY IMPERMEABLE<br>( $10^{-4} - 10^{-6}$ cm/sec) <input type="checkbox"/> C. RELATIVELY PERMEABLE<br>( $10^{-2} - 10^{-4}$ cm/sec) <input type="checkbox"/> D. VERY PERMEABLE<br>(Greater than $10^{-2}$ cm/sec) |  |   |  |  |                |
| 03 DEPTH TO BEDROCK<br>25 (ft)   |  | 04 DEPTH OF CONTAMINATED SOIL ZONE<br>unknown (ft)  |  | 05 SOIL pH<br>7.74   |                |
| 06 NET PRECIPITATION<br>-12 (in)   |  | 07 ONE YEAR 24 HOUR RAINFALL<br>1.25 (in)   |  | 08 SLOPE<br>SITE SLOPE 0-5%    DIRECTION OF SITE SLOPE north northeast    TERRAIN AVERAGE SLOPE 0-5% |                |
| 09 FLOOD POTENTIAL<br>SITE IS IN 100 YEAR FLOODPLAIN   |  | 10 <input type="checkbox"/> SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY              |  |  |                |
| 11 DISTANCE TO WETLANDS (5 acre minimum)   |  |   | 12 DISTANCE TO CRITICAL HABITAT (of endangered species)                                |  |                |
| ESTUARINE<br>A. N/A (mi)    OTHER (freshwater)<br>B. 0.25 (mi)   |  |   | N/A (mi)<br>ENDANGERED SPECIES: no endangered species in Park <sup>10</sup> City area. |  |                |
| 13 LAND USE IN VICINITY  |  |   |  |  |                |
| DISTANCE TO:<br>COMMERCIAL/INDUSTRIAL<br>A. 1.5 (mi)    RESIDENTIAL AREAS: NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES<br>6 mi. National Forest<br>1.5 mi. Residential Area<br>B. 2 (mi)    AGRICULTURAL LANDS<br>PRIME AG LAND    AG LAND<br>C. N/A (mi)    adjacent to site<br>D. <1 mile (mi)    pastureland, hay           |  |   |  |  |                |
| 14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY   |  |   |  |  |                |
| Richardson Flat is a natural depression at the base of the Wasatch Range, adjacent to Silver Creek.  |  |   |  |  |                |
| VII. SOURCES OF INFORMATION (Cite specific references, e.g., State files, sample analysis, reports)  |  |   |  |  |                |
| 10 Telecon; S. Kennedy to Larry England; 9/4/85.   |  |   |  |  |                |

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|                 |                       |  |  |   |  |                 |                       |
|-----------------|-----------------------|--|--|---|--|-----------------|-----------------------|
|                 |                       | <b>POTENTIAL HAZARDOUS WASTE SITE<br/>SITE INSPECTION REPORT</b> |  | <b>I. IDENTIFICATION</b>  |  |                 |                       |
|                 |                       | <b>PART 8 - SAMPLE AND FIELD INFORMATION</b>                     |  | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"><b>01 STATE</b></td> <td><b>02 SITE NUMBER</b></td> </tr> <tr> <td>UT</td> <td>D980952840</td> </tr> </table> |  | <b>01 STATE</b> | <b>02 SITE NUMBER</b> |
| <b>01 STATE</b> | <b>02 SITE NUMBER</b> |  |  |   |  |                 |                       |
| UT              | D980952840            |  |  |   |  |                 |                       |

| II. SAMPLES TAKEN |                            |  |                                     |
|-------------------|----------------------------|--|-------------------------------------|
| SAMPLE TYPE       | 01 NUMBER OF SAMPLES TAKEN | 02 SAMPLES SENT TO                             | 03 ESTIMATED DATE RESULTS AVAILABLE |
| GROUNDWATER       | 3                          | EPA Region 8 Laboratory, Lakewood, CO          | Rec'd 10/16/85                      |
| SURFACE WATER     | 6                          | " " "  | Rec'd 7/12/85                       |
| Tailings Surface  | 4                          | EPA Region 8 Lab & Versar Inc. Springfield VA  | Rec'd 7/12/85                       |
| WASTE Subsurface  | 4                          |  | Rec'd 10/16/85                      |
| AIR (High-vol)    | 29                         | Hittman-Ebasco, Columbia, MD                   | 8/86                                |
| RUNOFF            |                            |  |                                     |
| SPILL             |                            |  |                                     |
| SOIL Surface      | 1                          | EPA Region 8 Lab, Lakewood, CO                 | Rec'd 7/12/85                       |
| Subsurface        | 2                          | EPA Region 8 Lab & Versar, Inc. Springfield VA | Rec'd 10/16/85                      |
| VEGETATION        |                            |  |                                     |
| OTHER             |                            |  |                                     |

| III. FIELD MEASUREMENTS TAKEN |   |
|-------------------------------|---|
| <b>01 TYPE</b>                | <b>02 COMMENTS</b>  |
| pH                            | Ground water samples ranged from 6.43 to 6.89<br>Surface water samples (Silver Cr. tailings ditch) ranged from 7.26 to 7.54 |
| temperature                   | Ground water 9.5°C to 11°C<br>Surface water 19°C to 20°C  |
| conductivity                  | Ground water 350 to 1450 umhos/cm<br>Surface water 550 to 1400 umhos/cm   |
| volatile organics (HNU)       | No readings greater than background   |
| radiation                     | No readings greater than background   |

| IV. PHOTOGRAPHS AND MAPS   |   |
|--|---|
| 01 TYPE <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> AERIAL | 02 IN CUSTODY OF <u>Ecology and Environment FTT VIII Files</u><br><small>(Name of organization or individual)</small> |
| 03 MAPS<br><input checked="" type="checkbox"/> YES<br><input type="checkbox"/> NO  | 04 LOCATION OF MAPS<br><u>Ecology and Environment FTT VIII Files</u>  |

| V. OTHER FIELD DATA COLLECTED <small>(Provide narrative description)</small> |
|--|
|  |

| VI. SOURCES OF INFORMATION <small>(Cite specific references, e.g., state files, sample analysis, reports)</small> |
|---|
| <p>See pages 2, 2A, 4 and 7.</p>  |

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|   |  |   |                              |  |   |  |          |               |  |
|---|--|---|------------------------------|--|---|--|----------|---------------|--|
|   |  | <b>POTENTIAL HAZARDOUS WASTE SITE<br/>SITE INSPECTION REPORT<br/>PART 7 - OWNER INFORMATION</b> |                              |  |   | <b>I. IDENTIFICATION</b>   |          |               |  |
|   |  | 01 STATE<br>UT  | 02 SITE NUMBER<br>D980952840 |  |   |  |          |               |  |
| <b>II. CURRENT OWNER(S)</b>   |  |   |                              |  |   | <b>PARENT COMPANY (If applicable)</b>                              |          |               |  |
| 01 NAME<br>United Park City Mines Co.   |  |   | 02 D+B NUMBER                |  | 06 NAME<br>N/A                            |  |          | 09 D+B NUMBER |  |
| 03 STREET ADDRESS (P.O. Box, RFD #, etc.)<br>309 Kearns Bldg.   |  |   | 04 SIC CODE                  |  | 10 STREET ADDRESS (P.O. Box, RFD #, etc.) |  |          | 11 SIC CODE   |  |
| 05 CITY<br>Salt Lake City   |  | 06 STATE<br>UT  | 07 ZIP CODE<br>84101         |  | 12 CITY                                   |  | 13 STATE | 14 ZIP CODE   |  |
| 01 NAME   |  |   | 02 D+B NUMBER                |  | 08 NAME                                   |  |          | 09 D+B NUMBER |  |
| 03 STREET ADDRESS (P.O. Box, RFD #, etc.)   |  |   | 04 SIC CODE                  |  | 10 STREET ADDRESS (P.O. Box, RFD #, etc.) |  |          | 11 SIC CODE   |  |
| 05 CITY   |  | 06 STATE  | 07 ZIP CODE                  |  | 12 CITY                                   |  | 13 STATE | 14 ZIP CODE   |  |
| 01 NAME   |  |   | 02 D+B NUMBER                |  | 08 NAME                                   |  |          | 09 D+B NUMBER |  |
| 03 STREET ADDRESS (P.O. Box, RFD #, etc.)   |  |   | 04 SIC CODE                  |  | 10 STREET ADDRESS (P.O. Box, RFD #, etc.) |  |          | 11 SIC CODE   |  |
| 05 CITY   |  | 06 STATE  | 07 ZIP CODE                  |  | 12 CITY                                   |  | 13 STATE | 14 ZIP CODE   |  |
| 01 NAME   |  |   | 02 D+B NUMBER                |  | 08 NAME                                   |  |          | 09 D+B NUMBER |  |
| 03 STREET ADDRESS (P.O. Box, RFD #, etc.)   |  |   | 04 SIC CODE                  |  | 10 STREET ADDRESS (P.O. Box, RFD #, etc.) |  |          | 11 SIC CODE   |  |
| 05 CITY   |  | 06 STATE  | 07 ZIP CODE                  |  | 12 CITY                                   |  | 13 STATE | 14 ZIP CODE   |  |
| 01 NAME   |  |   | 02 D+B NUMBER                |  | 08 NAME                                   |  |          | 09 D+B NUMBER |  |
| 03 STREET ADDRESS (P.O. Box, RFD #, etc.)   |  |   | 04 SIC CODE                  |  | 10 STREET ADDRESS (P.O. Box, RFD #, etc.) |  |          | 11 SIC CODE   |  |
| 05 CITY   |  | 06 STATE  | 07 ZIP CODE                  |  | 12 CITY                                   |  | 13 STATE | 14 ZIP CODE   |  |
| <b>III. PREVIOUS OWNER(S) (List most recent first)</b>  |  |   |                              |  |   | <b>IV. REALTY OWNER(S) (If applicable: list most recent first)</b> |          |               |  |
| 01 NAME   |  |   | 02 D+B NUMBER                |  | 01 NAME                                   |  |          | 02 D+B NUMBER |  |
| 03 STREET ADDRESS (P.O. Box, RFD #, etc.)   |  |   | 04 SIC CODE                  |  | 03 STREET ADDRESS (P.O. Box, RFD #, etc.) |  |          | 04 SIC CODE   |  |
| 05 CITY   |  | 06 STATE  | 07 ZIP CODE                  |  | 05 CITY                                   |  | 06 STATE | 07 ZIP CODE   |  |
| 01 NAME   |  |   | 02 D+B NUMBER                |  | 01 NAME                                   |  |          | 02 D+B NUMBER |  |
| 03 STREET ADDRESS (P.O. Box, RFD #, etc.)   |  |   | 04 SIC CODE                  |  | 03 STREET ADDRESS (P.O. Box, RFD #, etc.) |  |          | 04 SIC CODE   |  |
| 05 CITY   |  | 06 STATE  | 07 ZIP CODE                  |  | 05 CITY                                   |  | 06 STATE | 07 ZIP CODE   |  |
| 01 NAME   |  |   | 02 D+B NUMBER                |  | 01 NAME                                   |  |          | 02 D+B NUMBER |  |
| 03 STREET ADDRESS (P.O. Box, RFD #, etc.)   |  |   | 04 SIC CODE                  |  | 03 STREET ADDRESS (P.O. Box, RFD #, etc.) |  |          | 04 SIC CODE   |  |
| 05 CITY   |  | 06 STATE  | 07 ZIP CODE                  |  | 05 CITY                                   |  | 06 STATE | 07 ZIP CODE   |  |
| 01 NAME   |  |   | 02 D+B NUMBER                |  | 01 NAME                                   |  |          | 02 D+B NUMBER |  |
| 03 STREET ADDRESS (P.O. Box, RFD #, etc.)   |  |   | 04 SIC CODE                  |  | 03 STREET ADDRESS (P.O. Box, RFD #, etc.) |  |          | 04 SIC CODE   |  |
| 05 CITY   |  | 06 STATE  | 07 ZIP CODE                  |  | 05 CITY                                   |  | 06 STATE | 07 ZIP CODE   |  |
| <b>V. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)</b> |  |   |                              |  |   |  |          |               |  |
| See pages 2, 2A, 4 and 7.   |  |   |                              |  |   |  |          |               |  |



**POTENTIAL HAZARDOUS WASTE SITE  
SITE INSPECTION REPORT  
PART 8 - OPERATOR INFORMATION**

**I. IDENTIFICATION**

|                |                              |
|----------------|------------------------------|
| 01 STATE<br>UT | 02 SITE NUMBER<br>D980952840 |
|----------------|------------------------------|

**II. CURRENT OPERATOR** *(Provide if different from owner)***OPERATOR'S PARENT COMPANY** *(If applicable)*

|   |                                    |                      |  |   |          |               |  |
|---|------------------------------------|----------------------|--|---|----------|---------------|--|
| 01 NAME<br>United Park City Mines, Co                         |                                    | 02 D+B NUMBER        |  | 10 NAME<br>N/A                            |          | 11 D+B NUMBER |  |
| 03 STREET ADDRESS (P.O. Box, RFD #, etc.)<br>309 Kearns Bldg. |                                    | 04 SIC CODE          |  | 12 STREET ADDRESS (P.O. Box, RFD #, etc.) |          | 13 SIC CODE   |  |
| 05 CITY<br>Salt Lake City                                     | 06 STATE<br>UT                     | 07 ZIP CODE<br>84101 |  | 14 CITY                                   | 15 STATE | 16 ZIP CODE   |  |
| 08 YEARS OF OPERATION   | 09 NAME OF OWNER<br>same as above. |                      |  |   |          |               |  |

**III. PREVIOUS OPERATOR(S)** *(List most recent first; provide only if different from owner)***PREVIOUS OPERATORS' PARENT COMPANIES** *(If applicable)*

|   |                                     |               |  |   |          |               |  |
|---|-------------------------------------|---------------|--|---|----------|---------------|--|
| 01 NAME                                   |                                     | 02 D+B NUMBER |  | 10 NAME                                   |          | 11 D+B NUMBER |  |
| 03 STREET ADDRESS (P.O. Box, RFD #, etc.) |                                     | 04 SIC CODE   |  | 12 STREET ADDRESS (P.O. Box, RFD #, etc.) |          | 13 SIC CODE   |  |
| 05 CITY                                   | 06 STATE                            | 07 ZIP CODE   |  | 14 CITY                                   | 15 STATE | 16 ZIP CODE   |  |
| 08 YEARS OF OPERATION                     | 09 NAME OF OWNER DURING THIS PERIOD |               |  |   |          |               |  |

|   |                                     |               |  |   |          |               |  |
|---|-------------------------------------|---------------|--|---|----------|---------------|--|
| 01 NAME                                   |                                     | 02 D+B NUMBER |  | 10 NAME                                   |          | 11 D+B NUMBER |  |
| 03 STREET ADDRESS (P.O. Box, RFD #, etc.) |                                     | 04 SIC CODE   |  | 12 STREET ADDRESS (P.O. Box, RFD #, etc.) |          | 13 SIC CODE   |  |
| 05 CITY                                   | 06 STATE                            | 07 ZIP CODE   |  | 14 CITY                                   | 15 STATE | 16 ZIP CODE   |  |
| 08 YEARS OF OPERATION                     | 09 NAME OF OWNER DURING THIS PERIOD |               |  |   |          |               |  |


  

|   |                                     |               |  |   |          |               |  |
|---|-------------------------------------|---------------|--|---|----------|---------------|--|
| 01 NAME                                   |                                     | 02 D+B NUMBER |  | 10 NAME                                   |          | 11 D+B NUMBER |  |
| 03 STREET ADDRESS (P.O. Box, RFD #, etc.) |                                     | 04 SIC CODE   |  | 12 STREET ADDRESS (P.O. Box, RFD #, etc.) |          | 13 SIC CODE   |  |
| 05 CITY                                   | 06 STATE                            | 07 ZIP CODE   |  | 14 CITY                                   | 15 STATE | 16 ZIP CODE   |  |
| 08 YEARS OF OPERATION                     | 09 NAME OF OWNER DURING THIS PERIOD |               |  |   |          |               |  |


**IV. SOURCES OF INFORMATION** *(Cite specific references, e.g., state files, sample analysis, reports)*


See pages 2, 2A, 4 and 7.



|   |                 | <b>POTENTIAL HAZARDOUS WASTE SITE<br/>SITE INSPECTION REPORT<br/>PART 9 - GENERATOR/TRANSPORTER INFORMATION</b> |  | <b>I. IDENTIFICATION</b>                         |                                     |
|--|-----------------|---|--|--|-------------------------------------|
|  |                 |   |  | <b>01 STATE</b><br>UT                            | <b>02 SITE NUMBER</b><br>D980952840 |
| <b>II. ON-SITE GENERATOR</b>   |                 |   |  |  |                                     |
| <b>01 NAME</b><br>None   |                 | <b>02 D+B NUMBER</b>  |  |  |                                     |
| <b>03 STREET ADDRESS (P.O. Box, RFD #, etc.)</b>   |                 | <b>04 SIC CODE</b>  |  |  |                                     |
| <b>05 CITY</b>   | <b>06 STATE</b> | <b>07 ZIP CODE</b>  |  |  |                                     |
| <b>III. OFF-SITE GENERATOR(S)</b>  |                 |   |  |  |                                     |
| <b>01 NAME</b><br>None   |                 | <b>02 D+B NUMBER</b>  |  | <b>01 NAME</b>                                   |                                     |
| <b>03 STREET ADDRESS (P.O. Box, RFD #, etc.)</b>   |                 | <b>04 SIC CODE</b>  |  | <b>03 STREET ADDRESS (P.O. Box, RFD #, etc.)</b> |                                     |
| <b>05 CITY</b>   | <b>06 STATE</b> | <b>07 ZIP CODE</b>  |  | <b>05 CITY</b>                                   | <b>06 STATE</b>                     |
| <b>01 NAME</b>   |                 | <b>02 D+B NUMBER</b>  |  | <b>01 NAME</b>                                   |                                     |
| <b>03 STREET ADDRESS (P.O. Box, RFD #, etc.)</b>   |                 | <b>04 SIC CODE</b>  |  | <b>03 STREET ADDRESS (P.O. Box, RFD #, etc.)</b> |                                     |
| <b>05 CITY</b>   | <b>06 STATE</b> | <b>07 ZIP CODE</b>  |  | <b>05 CITY</b>                                   | <b>06 STATE</b>                     |
| <b>IV. TRANSPORTER(S)</b>  |                 |   |  |  |                                     |
| <b>01 NAME</b><br>Mr. Ray Wortley *  |                 | <b>02 D+B NUMBER</b>  |  | <b>01 NAME</b>                                   |                                     |
| <b>03 STREET ADDRESS (P.O. Box, RFD #, etc.)</b><br>unknown  |                 | <b>04 SIC CODE</b>  |  | <b>03 STREET ADDRESS (P.O. Box, RFD #, etc.)</b> |                                     |
| <b>05 CITY</b>   | <b>06 STATE</b> | <b>07 ZIP CODE</b>  |  | <b>05 CITY</b>                                   | <b>06 STATE</b>                     |
| <b>01 NAME</b>   |                 | <b>02 D+B NUMBER</b>  |  | <b>01 NAME</b>                                   |                                     |
| <b>03 STREET ADDRESS (P.O. Box, RFD #, etc.)</b>   |                 | <b>04 SIC CODE</b>  |  | <b>03 STREET ADDRESS (P.O. Box, RFD #, etc.)</b> |                                     |
| <b>05 CITY</b>   | <b>06 STATE</b> | <b>07 ZIP CODE</b>  |  | <b>05 CITY</b>                                   | <b>06 STATE</b>                     |
| <b>V. SOURCES OF INFORMATION</b> <small>(Cite specific references, e.g., State files, sample analysis, reports.)</small>   |                 |   |  |  |                                     |
| <p>* Allegedly removes tailings material for use as sewer line backfill and roadbase.</p> <p>11 Site Inspection Report, Richardson Flat Tailings; Utah Bureau of Solid and Hazardous Waste; 9/4/84; in E&amp;E files under TDD R8-8504-23.</p> |                 |   |  |  |                                     |


Ref 2

|   | <b>POTENTIAL HAZARDOUS WASTE SITE<br/>SITE INSPECTION REPORT<br/>PART 10 - PAST RESPONSE ACTIVITIES</b> | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: left; padding: 2px;">I. IDENTIFICATION</th> </tr> <tr> <td style="width: 50%; padding: 2px;">01 STATE<br/>UT</td> <td style="width: 50%; padding: 2px;">02 SITE NUMBER<br/>D980952840</td> </tr> </table> | I. IDENTIFICATION |  | 01 STATE<br>UT | 02 SITE NUMBER<br>D980952840 |
|--|---|--|-------------------|--|----------------|------------------------------|
| I. IDENTIFICATION  |   |  |                   |  |                |                              |
| 01 STATE<br>UT   | 02 SITE NUMBER<br>D980952840  |  |                   |  |                |                              |
| <b>II. PAST RESPONSE ACTIVITIES</b>  |   |  |                   |  |                |                              |
| 01 <input type="checkbox"/> A. WATER SUPPLY CLOSED<br>04 DESCRIPTION<br>No recorded history.   | 02 DATE _____   | 03 AGENCY _____  |                   |  |                |                              |
| 01 <input type="checkbox"/> B. TEMPORARY WATER SUPPLY PROVIDED<br>04 DESCRIPTION<br>None observed or reported.   | 02 DATE _____   | 03 AGENCY _____  |                   |  |                |                              |
| 01 <input type="checkbox"/> C. PERMANENT WATER SUPPLY PROVIDED<br>04 DESCRIPTION<br>None observed or reported.   | 02 DATE _____   | 03 AGENCY _____  |                   |  |                |                              |
| 01 <input type="checkbox"/> D. SPILLED MATERIAL REMOVED<br>04 DESCRIPTION<br>None observed or reported.  | 02 DATE _____   | 03 AGENCY _____  |                   |  |                |                              |
| 01 <input type="checkbox"/> E. CONTAMINATED SOIL REMOVED<br>04 DESCRIPTION<br>None observed or reported.   | 02 DATE _____   | 03 AGENCY _____  |                   |  |                |                              |
| 01 <input type="checkbox"/> F. WASTE REPACKAGED<br>04 DESCRIPTION<br>None observed or reported.  | 02 DATE _____   | 03 AGENCY _____  |                   |  |                |                              |
| 01 <input type="checkbox"/> G. WASTE DISPOSED ELSEWHERE<br>04 DESCRIPTION<br>None observed or reported.  | 02 DATE _____   | 03 AGENCY _____  |                   |  |                |                              |
| 01 <input type="checkbox"/> H. ON SITE BURIAL<br>04 DESCRIPTION<br>None observed or reported.  | 02 DATE _____   | 03 AGENCY _____  |                   |  |                |                              |
| 01 <input type="checkbox"/> I. IN SITU CHEMICAL TREATMENT<br>04 DESCRIPTION<br>None observed or reported.  | 02 DATE _____   | 03 AGENCY _____  |                   |  |                |                              |
| 01 <input type="checkbox"/> J. IN SITU BIOLOGICAL TREATMENT<br>04 DESCRIPTION<br>None observed or reported.  | 02 DATE _____   | 03 AGENCY _____  |                   |  |                |                              |
| 01 <input type="checkbox"/> K. IN SITU PHYSICAL TREATMENT<br>04 DESCRIPTION<br>None observed or reported.  | 02 DATE _____   | 03 AGENCY _____  |                   |  |                |                              |
| 01 <input type="checkbox"/> L. ENCAPSULATION<br>04 DESCRIPTION<br>None observed or reported.   | 02 DATE _____   | 03 AGENCY _____  |                   |  |                |                              |
| 01 <input type="checkbox"/> M. EMERGENCY WASTE TREATMENT<br>04 DESCRIPTION<br>None observed or reported.   | 02 DATE _____   | 03 AGENCY _____  |                   |  |                |                              |
| 01 <input type="checkbox"/> N. CUTOFF WALLS<br>04 DESCRIPTION<br>None observed or reported.  | 02 DATE _____   | 03 AGENCY _____  |                   |  |                |                              |
| 01 <input checked="" type="checkbox"/> O. EMERGENCY DIKING/SURFACE WATER DIVERSION<br>04 DESCRIPTION<br>A dam was built at the northwestern extension of the tailings to contain the ponded water. | 02 DATE _____   | 03 AGENCY _____  |                   |  |                |                              |
| 01 <input type="checkbox"/> P. CUTOFF TRENCHES/SUMP<br>04 DESCRIPTION<br>None observed or reported.  | 02 DATE _____   | 03 AGENCY _____  |                   |  |                |                              |
| 01 <input type="checkbox"/> Q. SUBSURFACE CUTOFF WALL<br>04 DESCRIPTION<br>None observed or reported.  | 02 DATE _____   | 03 AGENCY _____  |                   |  |                |                              |

|   |   |  |                          |                              |
|---|---|--|--------------------------|------------------------------|
|                                  | <b>POTENTIAL HAZARDOUS WASTE SITE<br/>SITE INSPECTION REPORT<br/>PART 10 - PAST RESPONSE ACTIVITIES</b> |  | <b>I. IDENTIFICATION</b> |                              |
|   |   |  | 01 STATE<br>UT           | 02 SITE NUMBER<br>D980952840 |
| <b>II. PAST RESPONSE ACTIVITIES</b> <i>(Continued)</i>  |   |  |                          |                              |
| 01 <input type="checkbox"/> R. BARRIER WALLS CONSTRUCTED<br>04 DESCRIPTION<br>None observed or reported.          |   |  |                          |                              |
| 02 DATE _____ 03 AGENCY _____   |   |  |                          |                              |
| 01 <input type="checkbox"/> S. CAPPING/COVERING<br>04 DESCRIPTION<br>None observed or reported.                   |   |  |                          |                              |
| 02 DATE _____ 03 AGENCY _____   |   |  |                          |                              |
| 01 <input type="checkbox"/> T. BULK TANKAGE REPAIRED<br>04 DESCRIPTION<br>None observed or reported.              |   |  |                          |                              |
| 02 DATE _____ 03 AGENCY _____   |   |  |                          |                              |
| 01 <input type="checkbox"/> U. GROUT CURTAIN CONSTRUCTED<br>04 DESCRIPTION<br>None observed or reported.          |   |  |                          |                              |
| 02 DATE _____ 03 AGENCY _____   |   |  |                          |                              |
| 01 <input type="checkbox"/> V. BOTTOM SEALED<br>04 DESCRIPTION<br>None observed or reported.                      |   |  |                          |                              |
| 02 DATE _____ 03 AGENCY _____   |   |  |                          |                              |
| 01 <input type="checkbox"/> W. GAS CONTROL<br>04 DESCRIPTION<br>None observed or reported.                        |   |  |                          |                              |
| 02 DATE _____ 03 AGENCY _____   |   |  |                          |                              |
| 01 <input type="checkbox"/> X. FIRE CONTROL<br>04 DESCRIPTION<br>None observed or reported.                       |   |  |                          |                              |
| 02 DATE _____ 03 AGENCY _____   |   |  |                          |                              |
| 01 <input type="checkbox"/> Y. LEACHATE TREATMENT<br>04 DESCRIPTION<br>None observed or reported.                 |   |  |                          |                              |
| 02 DATE _____ 03 AGENCY _____   |   |  |                          |                              |
| 01 <input type="checkbox"/> Z. AREA EVACUATED<br>04 DESCRIPTION<br>None observed or reported.                     |   |  |                          |                              |
| 02 DATE _____ 03 AGENCY _____   |   |  |                          |                              |
| 01 <input type="checkbox"/> 1. ACCESS TO SITE RESTRICTED<br>04 DESCRIPTION<br>None observed or reported.          |   |  |                          |                              |
| 02 DATE _____ 03 AGENCY _____   |   |  |                          |                              |
| 01 <input type="checkbox"/> 2. POPULATION RELOCATED<br>04 DESCRIPTION<br>None observed or reported.               |   |  |                          |                              |
| 02 DATE _____ 03 AGENCY _____   |   |  |                          |                              |
| 01 <input type="checkbox"/> 3. OTHER REMEDIAL ACTIVITIES<br>04 DESCRIPTION<br>None observed or reported.          |   |  |                          |                              |
| 02 DATE _____ 03 AGENCY _____   |   |  |                          |                              |
| <b>III. SOURCES OF INFORMATION</b> <i>(Cite specific references, e.g., state files, sample analysis, reports)</i> |   |  |                          |                              |
| See pages 2, 2A, 4 and 7 and 11.  |   |  |                          |                              |

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|   | <b>POTENTIAL HAZARDOUS WASTE SITE<br/>SITE INSPECTION REPORT<br/>PART 11 - ENFORCEMENT INFORMATION</b> | I. IDENTIFICATION |                              |
|  |  | 01 STATE<br>UT    | 02 SITE NUMBER<br>D980952840 |
| II. ENFORCEMENT INFORMATION  |  |                   |                              |
| 01 PAST REGULATORY/ENFORCEMENT ACTION <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO  |  |                   |                              |
| 02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION  |  |                   |                              |
| <ul style="list-style-type: none"><li>- No agency enforcement action taken at this site.</li><li>- SI performed by State of Utah BSMW 12/21/84.</li><li>- SI performed by EPA FIT VIII, 6,7 &amp; 8/85.</li><li>- Air sampling performed by EPA FIT VIII, 7/7-14/86.</li></ul> |  |                   |                              |
| III. SOURCES OF INFORMATION <small>(Cite specific references, e.g., state files, sample analysis, reports)</small>   |  |                   |                              |
| See pages 2, 2A, 4 and 7 and 11.   |  |                   |                              |